SEQUENCE LISTING

<110> Poustka, et al.

<120> Protein (TP) That is Involved in the Development of the Nervous System

<130> 4121-129

<140>

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<150>   PCT/DE00/00583
        DE 199 08 423.8
<151> 2000-02-28
        1999-02-26

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<170> PatentIn Ver. 2.0

<210> 1
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<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<223> (3)..(242)

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ag cga gtt act cac gct tcc cct cca tcg gaa gcc agc cag gcc aaa        47
   Arg Val Thr His Ala Ser Pro Pro Ser Glu Ala Ser Gln Ala Lys
    1           5               10                  15


acc cag caa gat atg cag tcc agt ctg gca gcc aga tat gca act cag     95
Thr Gln Gln Asp Met Gln Ser Ser Leu Ala Ala Arg Tyr Ala Thr Gln
                    20              25              30


tct aat cac agt gga att gca acc agt caa aaa aag cct act agg ctt    143
Ser Asn His Ser Gly Ile Ala Thr Ser Gln Lys Lys Pro Thr Arg Leu
                35              40              45


cca ggg ccc tct agg gtg cct gct gca gga agc agc agc aag gtc cag    191
Pro Gly Pro Ser Arg Val Pro Ala Ala Gly Ser Ser Ser Lys Val Gln
            50              55              60


gga gcc tct aat tta aat agg aga agt cag agc ttt aac agc att gac    239
Gly Ala Ser Asn Leu Asn Arg Arg Ser Gln Ser Phe Asn Ser Ile Asp
        65              70              75


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aaa
Lys
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1

80

<210> 2
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<212> PRT
<213> Homo sapiens

<400> 2

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Arg Val Thr His Ala Ser Pro Pro Ser Glu Ala Ser Gln Ala Lys Thr
1               5                   10                  15


Gln Gln Asp Met Gln Ser Ser Leu Ala Ala Arg Tyr Ala Thr Gln Ser
            20                  25                  30


Asn His Ser Gly Ile Ala Thr Ser Gln Lys Lys Pro Thr Arg Leu Pro
        35                  40                  45


Gly Pro Ser Arg Val Pro Ala Ala Gly Ser Ser Ser Lys Val Gln Gly
    50                  55                  60


Ala Ser Asn Leu Asn Arg Arg Ser Gln Ser Phe Asn Ser Ile Asp Lys
65                  70                  75                  80
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<210> 3
<211> 159
<212> DNA
<213> Homo sapiens

<220>
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<400> 3

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ggc act cac gag gtc cag agc ctg ctc atg aga acg ggt agt gtg aga      48
Gly Thr His Glu Val Gln Ser Leu Leu Met Arg Thr Gly Ser Val Arg
                5                   10                  15


tct act ctc tca gaa aga tat acc cca tca tct cgg cag gcc aac caa      96
Ser Thr Leu Ser Glu Arg Tyr Thr Pro Ser Ser Arg Gln Ala Asn Gln
                20                  25                  30


gaa gag ggc aaa gag tgg ttg cgt tct cat tct act gga ggg ctt cag     144
Glu Glu Gly Lys Glu Trp Leu Arg Ser His Ser Thr Gly Gly Leu Gln
                35                  40                  45


                                                                     159
gac act ggc aac cag
Asp Thr Gly Asn Gln
        50
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2

<210> 4
<211> 53
<212> PRT
<213> Homo sapiens

<400> 4

Gly Thr His Glu Val Gln Ser Leu Leu Met Arg Thr Gly Ser Val Arg
 1   5   10   15

Ser Thr Leu Ser Glu Arg Tyr Thr Pro Ser Ser Arg Gln Ala Asn Gln
            20   25   30

Glu Glu Gly Lys Glu Trp Leu Arg Ser His Ser Thr Gly Gly Leu Gln
        35   40   45

Asp Thr Gly Asn Gln
        50

<210> 5
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<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<223> (2)..(1627)

<400> 5

g gat cag ctt cgg gag acc atg cac aac atg cag ttg gag gtg gac   46
  Asp Gln Leu Arg Glu Thr Met His Asn Met Gln Leu Glu Val Asp

ctg ctg aaa gca gag aat gac cga ctg aag gta gcc cca ggc ccc tca   94
Leu Leu Lys Ala Glu Asn Asp Arg Leu Lys Val Ala Pro Gly Pro Ser

tca ggc tcc act cca ggg cag gtc cct gga tca tct gca tta tct tcc   142
Ser Gly Ser Thr Pro Gly Gln Val Pro Gly Ser Ser Ala Leu Ser Ser

cca cgc cgc tcc cta ggc ctg gca ctc acc cat tcc ttc ggc ccc agt   190
Pro Arg Arg Ser Leu Gly Leu Ala Leu Thr His Ser Phe Gly Pro Ser

ctt gca gac aca gac ctg tca ccc atg gat ggc atc agt act tgt ggt   238
Leu Ala Asp Thr Asp Leu Ser Pro Met Asp Gly Ile Ser Thr Cys Gly

cca aag gag gaa gtg acc ctc cgg gtg gtg gtg agg atg ccc ccg cag   286
Pro Lys Glu Glu Val Thr Leu Arg Val Val Val Arg Met Pro Pro Gln

3

```
cac atc atc aaa ggg gac ttg aag cag cag gaa ttc ttc ctg ggc tgt        334
His Ile Ile Lys Gly Asp Leu Lys Gln Gln Glu Phe Phe Leu Gly Cys


agc aag gtc agt gga aaa gtt gac tgg aag atg ctg gat gaa gct gtt        382
Ser Lys Val Ser Gly Lys Val Asp Trp Lys Met Leu Asp Glu Ala Val


ttc caa gtg ttc aag gac tat att tct aaa atg gac cca gcc tct acc        430
Phe Gln Val Phe Lys Asp Tyr Ile Ser Lys Met Asp Pro Ala Ser Thr


ctg gga cta agc act gag tcc atc cat ggc tac agc atc agc cac gtg        478
Leu Gly Leu Ser Thr Glu Ser Ile His Gly Tyr Ser Ile Ser His Val


aaa cga gtg ttg gat gca gag ccc ccc gag atg cct cct tgc cgt cga        526
Lys Arg Val Leu Asp Ala Glu Pro Pro Glu Met Pro Pro Cys Arg Arg


ggt gtc aat aac ata tca gtc tcc ctc aaa ggt ctg aag gag aaa tgc        574
Gly Val Asn Asn Ile Ser Val Ser Leu Lys Gly Leu Lys Glu Lys Cys


gtc gac agc ctg gtg ttc gag acg ctg atc ccc aag ccg atg atg cag        622
Val Asp Ser Leu Val Phe Glu Thr Leu Ile Pro Lys Pro Met Met Gln


cac tac ata agc ctc ctg ctg aag cac cgg cgc ctc gtc ctc tcg ggc        670
His Tyr Ile Ser Leu Leu Leu Lys His Arg Arg Leu Val Leu Ser Gly


ccc agc ggc acg ggc aag acc tac ctg acc aat cgc ttg gcc gag tac        718
Pro Ser Gly Thr Gly Lys Thr Tyr Leu Thr Asn Arg Leu Ala Glu Tyr


ctg gtg gag cgc tct ggc cgt gag gtc aca gag ggc atc gtc agc acc        766
Leu Val Glu Arg Ser Gly Arg Glu Val Thr Glu Gly Ile Val Ser Thr


ttc aac atg cac cag cag tct tgc aag gat ctg caa ctg tat ctt tcc        814
Phe Asn Met His Gln Gln Ser Cys Lys Asp Leu Gln Leu Tyr Leu Ser


aac cta gcc aac cag ata gac cgg gaa aca gga att ggg gat gtg ccc        862
Asn Leu Ala Asn Gln Ile Asp Arg Glu Thr Gly Ile Gly Asp Val Pro


ctg gtg att cta ttg gat gac ctg agt gaa gca ggc tcc atc agt gag        910
Leu Val Ile Leu Leu Asp Asp Leu Ser Glu Ala Gly Ser Ile Ser Glu


ttg gtc aat ggg gcc ctc acc tgc aag tat cat aaa tgt ccc tat att        958
Leu Val Asn Gly Ala Leu Thr Cys Lys Tyr His Lys Cys Pro Tyr Ile
```

4

```
ata ggt acc acc aat cag cct gta aaa atg aca ccc aac cat ggc ttg      1006
Ile Gly Thr Thr Asn Gln Pro Val Lys Met Thr Pro Asn His Gly Leu

cac ttg agc ttc agg atg ttg acc ttc tcc aac aac gtg gag cca gcc      1054
His Leu Ser Phe Arg Met Leu Thr Phe Ser Asn Asn Val Glu Pro Ala

aat ggc ttc ctg gtt cgt tac ctg agg agg aag ctg gta gag tca gac      1102
Asn Gly Phe Leu Val Arg Tyr Leu Arg Arg Lys Leu Val Glu Ser Asp

agc gac atc aat gcc aac aag gaa gag ctg ctt cgg gtg ctc gac tgg      1150
Ser Asp Ile Asn Ala Asn Lys Glu Glu Leu Leu Arg Val Leu Asp Trp

gta ccc aag ctg tgg tat cat ctc cac acc ttc ctt gag aag cac agc      1198
Val Pro Lys Leu Trp Tyr His Leu His Thr Phe Leu Glu Lys His Ser

acc tca gac ttc ctc atc ggc cct tgc ttc ttt ctg tcg tgt ccc att      1246
Thr Ser Asp Phe Leu Ile Gly Pro Cys Phe Phe Leu Ser Cys Pro Ile

ggc att gag gac ttc cgg acc tgg ttc att gac ctg tgg aac aac tct      1294
Gly Ile Glu Asp Phe Arg Thr Trp Phe Ile Asp Leu Trp Asn Asn Ser

atc att ccc tat cta cag gaa gga gcc aag gat ggg ata aag gtc cat      1342
Ile Ile Pro Tyr Leu Gln Glu Gly Ala Lys Asp Gly Ile Lys Val His

gga cag aaa gct gct tgg gag gac cca gtg gaa tgg gtc cgg gac aca      1390
Gly Gln Lys Ala Ala Trp Glu Asp Pro Val Glu Trp Val Arg Asp Thr

ctt ccc tgg cca tca gcc caa caa gac caa tca aag ctg tac cac ctg      1438
Leu Pro Trp Pro Ser Ala Gln Gln Asp Gln Ser Lys Leu Tyr His Leu

ccc cca ccc acc gtg ggc cct cac agc att gcc tca cct ccc gag gat      1486
Pro Pro Pro Thr Val Gly Pro His Ser Ile Ala Ser Pro Pro Glu Asp

agg aca gtc aaa gac agc acc cca agt tct ctg gac tca gat cct ctg      1534
Arg Thr Val Lys Asp Ser Thr Pro Ser Ser Leu Asp Ser Asp Pro Leu

atg gcc atg ctg ctg aaa ctt caa gaa gct gcc aac tac att gag tct      1582
Met Ala Met Leu Leu Lys Leu Gln Glu Ala Ala Asn Tyr Ile Glu Ser

cca gat cga gaa acc atc ctg gac ccc aac ctt cag gca aca ctt        1627
Pro Asp Arg Glu Thr Ile Leu Asp Pro Asn Leu Gln Ala Thr Leu
```

5

```
taagggttcg gcaatcactg tcaccccogg acagcagaac gctggcatca gctatcttag      1687

ctcctcctct cccctctcct ctttcagagc actggctctc cagccccagg aggagaacag      1747

gagggaggag gagatgaaag aggagggaca ggttcttggt gctgtacctt tgagaacttc      1807

ctaggaagga atggtggggt ggcgtttggg aacttgtgcc ccctaaacac atttactggc      1867

ctcctctaat gactttgggg aaaagatgat tctgggtctt tcccttgact tcttgtttca      1927

attacaaact cctgggcttt ctggggaggg gttcagaaaa catcaaaaca ctgcagcagt      1987

tcctaaatga ttctcacaag caaccctgag agagacagtc ttgtgaggga gatctggggg      2047

aggcaggaag ctcctcagat tttctcacag acccttccca attccatcac cactgccaac      2107

aactcctccc ccagagatct ggctggagcc cagaaaaaga agcatgtggt ttaaaaaatg      2167

tttaaatcaa tctgtaaaag gtaaaaatga aaacaaaaa caagcaaaca aacaaaaaac      2227

aatggaaaag atgaagctgg agagagagga accagttgcc aaggtagaga gctgcccgct      2287

cctgccctct ggatgacata ggggacatca acaagacggc tgccaacctg agaagtcacc      2347

aaaccacaaa aataacctta cagccttcag ggaaagacta ccagctctgt ctttctaccc      2407

tctaatttaa caatgcataa gagtcaataa accctacttt tttaaaaaaa aaaa            2461
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<210> 6
<211> 542
<212> PRT
<213> Homo sapiens

<400> 6

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Asp Gln Leu Arg Glu Thr Met His Asn Met Gln Leu Glu Val Asp Leu
 1               5                   10                  15

Leu Lys Ala Glu Asn Asp Arg Leu Lys Val Ala Pro Gly Pro Ser Ser
                20                  25                  30

Gly Ser Thr Pro Gly Gln Val Pro Gly Ser Ser Ala Leu Ser Ser Pro
                35                  40                  45

Arg Arg Ser Leu Gly Leu Ala Leu Thr His Ser Phe Gly Pro Ser Leu
    50                  55                  60

Ala Asp Thr Asp Leu Ser Pro Met Asp Gly Ile Ser Thr Cys Gly Pro
 65                  70                  75                  80

Lys Glu Glu Val Thr Leu Arg Val Val Val Arg Met Pro Pro Gln His
                85                  90                  95

Ile Ile Lys Gly Asp Leu Lys Gln Gln Glu Phe Phe Leu Gly Cys Ser
```

6

```
                 100                    105                        110
Lys Val Ser Gly Lys Val Asp Trp Lys Met Leu Asp Glu Ala Val Phe
            115                 120                 125

Gln Val Phe Lys Asp Tyr Ile Ser Lys Met Asp Pro Ala Ser Thr Leu
            130                 135                 140

Gly Leu Ser Thr Glu Ser Ile His Gly Tyr Ser Ile Ser His Val Lys
145                 150                 155                     160

Arg Val Leu Asp Ala Glu Pro Pro Glu Met Pro Pro Cys Arg Arg Gly
                165                 170                 175

Val Asn Asn Ile Ser Val Ser Leu Lys Gly Leu Lys Glu Lys Cys Val
                180                 185                 190

Asp Ser Leu Val Phe Glu Thr Leu Ile Pro Lys Pro Met Met Gln His
            195                 200                 205

Tyr Ile Ser Leu Leu Leu Lys His Arg Arg Leu Val Leu Ser Gly Pro
210                 215                 220

Ser Gly Thr Gly Lys Thr Tyr Leu Thr Asn Arg Leu Ala Glu Tyr Leu
225                 230                 235                     240

Val Glu Arg Ser Gly Arg Glu Val Thr Glu Gly Ile Val Ser Thr Phe
                245                 250                 255

Asn Met His Gln Gln Ser Cys Lys Asp Leu Gln Leu Tyr Leu Ser Asn
                260                 265                 270

Leu Ala Asn Gln Ile Asp Arg Glu Thr Gly Ile Gly Asp Val Pro Leu
                275                 280                 285

Val Ile Leu Leu Asp Asp Leu Ser Glu Ala Gly Ser Ile Ser Glu Leu
                290                 295                 300

Val Asn Gly Ala Leu Thr Cys Lys Tyr His Lys Cys Pro Tyr Ile Ile
305                 310                 315                     320

Gly Thr Thr Asn Gln Pro Val Lys Met Thr Pro Asn His Gly Leu His
                325                 330                 335

Leu Ser Phe Arg Met Leu Thr Phe Ser Asn Asn Val Glu Pro Ala Asn
                340                 345                 350

Gly Phe Leu Val Arg Tyr Leu Arg Arg Lys Leu Val Glu Ser Asp Ser
                355                 360                 365

Asp Ile Asn Ala Asn Lys Glu Glu Leu Leu Arg Val Leu Asp Trp Val
            370                 375                 380

Pro Lys Leu Trp Tyr His Leu His Thr Phe Leu Glu Lys His Ser Thr
385                 390                 395                     400

Ser Asp Phe Leu Ile Gly Pro Cys Phe Phe Leu Ser Cys Pro Ile Gly
```

7

```
                 405                    410                    415

Ile Glu Asp Phe Arg Thr Trp Phe Ile Asp Leu Trp Asn Asn Ser Ile
            420                 425                 430

Ile Pro Tyr Leu Gln Glu Gly Ala Lys Asp Gly Ile Lys Val His Gly
            435                 440                 445


Gln Lys Ala Ala Trp Glu Asp Pro Val Glu Trp Val Arg Asp Thr Leu
        450                 455                 460

Pro Trp Pro Ser Ala Gln Gln Asp Gln Ser Lys Leu Tyr His Leu Pro
465                 470                 475                 480

Pro Pro Thr Val Gly Pro His Ser Ile Ala Ser Pro Pro Glu Asp Arg
            485                 490                 495

Thr Val Lys Asp Ser Thr Pro Ser Ser Leu Asp Ser Asp Pro Leu Met
            500                 505                 510

Ala Met Leu Leu Lys Leu Gln Glu Ala Ala Asn Tyr Ile Glu Ser Pro
            515                 520                 525

Asp Arg Glu Thr Ile Leu Asp Pro Asn Leu Gln Ala Thr Leu
        530                 535                 540
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<210> 7
<211> 2568
<212> DNA
<213> mouse

<220>
<221> CDS
<223> (1)..(1695)


<400> 7


gaa cta tgg gaa aaa gag atg aag ctc acg gat atc cgg ttg gag gcc        48
Glu Leu Trp Glu Lys Glu Met Lys Leu Thr Asp Ile Arg Leu Glu Ala


ctc aac tct gcc cac cag ctg gac cag ctt cgg gag acc atg cac aat        96
Leu Asn Ser Ala His Gln Leu Asp Gln Leu Arg Glu Thr Met His Asn


atg cag ttg gag gtg gac ctg ctg aaa gca gag aat gac cgg ctg aag       144
Met Gln Leu Glu Val Asp Leu Leu Lys Ala Glu Asn Asp Arg Leu Lys


gtt gcc ccc ggc ccc tcc tca ggc tgc act cca ggg cag gtc cct ggg       192
Val Ala Pro Gly Pro Ser Ser Gly Cys Thr Pro Gly Gln Val Pro Gly
```

```
tca tcg gct ctg tcg tcc cct cga cgt tcc ctg ggc ctt gca ctc agc        240
Ser Ser Ala Leu Ser Ser Pro Arg Arg Ser Leu Gly Leu Ala Leu Ser


cat cct ttc agt cct agt ctc aca gac aca gac ctc tca ccc atg gat        288
His Pro Phe Ser Pro Ser Leu Thr Asp Thr Asp Leu Ser Pro Met Asp


ggc atc agc acc tgt ggt tca aag gaa gag gtg acc ctg cgg gtg gtg        336
Gly Ile Ser Thr Cys Gly Ser Lys Glu Glu Val Thr Leu Arg Val Val


gtc cgg atg ccg ccc cag cac atc atc aaa ggg gac tta aag cag cag        384
Val Arg Met Pro Pro Gln His Ile Ile Lys Gly Asp Leu Lys Gln Gln


gag ttc ttc ctg ggt tgc agc aag gtc agt ggc aaa gtt gac tgg aag        432
Glu Phe Phe Leu Gly Cys Ser Lys Val Ser Gly Lys Val Asp Trp Lys


atg ctg gat gaa gcc gtt ttc caa gtg ttc aag gac tac att tct aaa        480
Met Leu Asp Glu Ala Val Phe Gln Val Phe Lys Asp Tyr Ile Ser Lys


atg gac cca gcc tca acc ctg gga ctg agc act gag tcc ata cat ggc        528
Met Asp Pro Ala Ser Thr Leu Gly Leu Ser Thr Glu Ser Ile His Gly


tat agc ctc agc cac gtg aaa cga gtg ctg gat gct gag ccc cca gag        576
Tyr Ser Leu Ser His Val Lys Arg Val Leu Asp Ala Glu Pro Pro Glu


atg cct cct tgc cgc cga ggt gtc aat aac ata tca gtc gct ctc aaa        624
Met Pro Pro Cys Arg Arg Gly Val Asn Asn Ile Ser Val Ala Leu Lys


ggt ctg aaa gag aag tgt gtc gac agc ctg gtg ttc gag acg ctt atc        672
Gly Leu Lys Glu Lys Cys Val Asp Ser Leu Val Phe Glu Thr Leu Ile


ccc aag ccc atg atg cag cac tac atc agc ctc ctg ctc aag cac cgg        720
Pro Lys Pro Met Met Gln His Tyr Ile Ser Leu Leu Leu Lys His Arg


cgc ctg gtg ctc tcc ggc ccc agt ggc acc ggc aag acc tac ttg acc        768
Arg Leu Val Leu Ser Gly Pro Ser Gly Thr Gly Lys Thr Tyr Leu Thr


aat cgg cta gcc gag tac ctg gtg gag cgc tcc ggc cgc gag gtc acg        816
Asn Arg Leu Ala Glu Tyr Leu Val Glu Arg Ser Gly Arg Glu Val Thr


gat ggc atc gtc agc act ttc aac atg cac cag cag tct tgc aag gat        864
Asp Gly Ile Val Ser Thr Phe Asn Met His Gln Gln Ser Cys Lys Asp
```

9

```
ctg caa ctg tac ctc tcc aac cta gcc aac cag ata gac cgg gaa aca      912
Leu Gln Leu Tyr Leu Ser Asn Leu Ala Asn Gln Ile Asp Arg Glu Thr


ggg ata ggg gat gtg ccc ttg gtg atc ctc ctg gat gat ctg agt gaa      960
Gly Ile Gly Asp Val Pro Leu Val Ile Leu Leu Asp Asp Leu Ser Glu


gca ggc tcc atc agt gag ctg gtc aat ggg gcc ctc acc tgc aag tat     1008
Ala Gly Ser Ile Ser Glu Leu Val Asn Gly Ala Leu Thr Cys Lys Tyr


cac aaa tgt ccc tac att ata ggt acc acc aat cag cct gta aaa atg     1056
His Lys Cys Pro Tyr Ile Ile Gly Thr Thr Asn Gln Pro Val Lys Met


aca ccc aac cat ggc ttg cac ttg agc ttc agg atg ctg acc ttc tcg     1104
Thr Pro Asn His Gly Leu His Leu Ser Phe Arg Met Leu Thr Phe Ser


aac aat gtg gaa cca gcc aat ggc ttt ctg gtc cgt tac ctg cgg agg     1152
Asn Asn Val Glu Pro Ala Asn Gly Phe Leu Val Arg Tyr Leu Arg Arg


aag ttg gta gag tca gac agt gac gtc aat gct aac aag gaa gag ctg     1200
Lys Leu Val Glu Ser Asp Ser Asp Val Asn Ala Asn Lys Glu Glu Leu


ctt cgg gtg ctg gac tgg gtg ccc aag ctg tgg tat cac ctc cac acc     1248
Leu Arg Val Leu Asp Trp Val Pro Lys Leu Trp Tyr His Leu His Thr


ttc ctg gag aag cac agc acc tcg gac ttc ctc att ggc cct tgc ttc     1296
Phe Leu Glu Lys His Ser Thr Ser Asp Phe Leu Ile Gly Pro Cys Phe


ttc ctg tcc tgt ccc att ggc atc gag gac ttc cgg acc tgg ttc att     1344
Phe Leu Ser Cys Pro Ile Gly Ile Glu Asp Phe Arg Thr Trp Phe Ile


gac ctg tgg aac aat tcc atc atc ccc tat cta cag gaa gga gcc aag     1392
Asp Leu Trp Asn Asn Ser Ile Ile Pro Tyr Leu Gln Glu Gly Ala Lys


gat ggg atc aag gtt cat gga cag aaa gct gct tgg gaa gac ccg gtg     1440
Asp Gly Ile Lys Val His Gly Gln Lys Ala Ala Trp Glu Asp Pro Val


gaa tgg gtc cga gac act ctt ccc tgg ccg tcg gcc caa caa gac caa     1488
Glu Trp Val Arg Asp Thr Leu Pro Trp Pro Ser Ala Gln Gln Asp Gln


tca aag ctc tac cac ctg ccc ccg cct tct gtg ggc ccc cac agc act     1536
Ser Lys Leu Tyr His Leu Pro Pro Pro Ser Val Gly Pro His Ser Thr
```

10

```
gcc tca ccc ccg gag gac agg aca gtc aaa gac agc act cca aac tcc      1584
Ala Ser Pro Pro Glu Asp Arg Thr Val Lys Asp Ser Thr Pro Asn Ser


ctc gac tca gat ccc ctg atg gcc atg cta ctg aaa ctc caa gaa gct      1632
Leu Asp Ser Asp Pro Leu Met Ala Met Leu Leu Lys Leu Gln Glu Ala


gcc aac tac att gag tca cca gat cga gag act atc ctg gac ccc aac      1680
Ala Asn Tyr Ile Glu Ser Pro Asp Arg Glu Thr Ile Leu Asp Pro Asn


ctc cag gcg aca ctc tgagggcccg gcagtcactg tcaccctgga gggcagaagg      1735
Leu Gln Ala Thr Leu


ctggcttcag catcattagc tctcctctgc cctcttcctt catagctctg gctcaccagc      1795

ctcgccaaga gaacaggagg gaagaagagg gcaggaggag ggatgggttc tcggtgctga      1855

acctttgaga acttcctact aggaattgga gggggtggag tttgagaact ccgtgccoct      1915

taactacatt tgctggcctc ctcttacgac ttaggagaaa agatgattct ggtcttttct      1975

tcaagttttg tttcacctac aaactcttgg gctttctggg gagggattcg gaagatataa      2035

acagacaaac aaaaacaaac aaaccaacta cagcagttcc aagctcgttc tcacaaacac      2095

ctctgagaca gtcacatgtg ggcaaatcta agggaggcag gaagctctac agactttctt      2155

gcaaacccтt cccagttctg tcgacactgc caacaacctc cccgccagag acctggccag      2215

agccaagaaa agagaagcat gtggtttaac agaaaaacaa aacaaaacaa aacaaaaaat      2275

atatgtgtaa atcaacctgt agaaggtaaa aacggcaatg gaaaagatga agctggaagg      2335

aggggcccag ttgccaagat ggaacgagag ctgccagatc ttgccttctg gatgacaaga      2395

ggggacattg caagatggct gccagtctaa aacgtcacca gaccacaaga gtaacatcac      2455

agccttcgaa gaaaggccac aagctgtctt tctgccctct aactgaacat gcatgaaaag      2515

tcaataaacc ctactтtтta attттtaaaa aaaaaaaaaa aaaaaaaaaa aaa      2568
```

<210> 8
<211> 565
<212> PRT
<213> mouse

<400> 8

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Glu Leu Trp Glu Lys Glu Met Lys Leu Thr Asp Ile Arg Leu Glu Ala
 1               5                  10                  15


Leu Asn Ser Ala His Gln Leu Asp Gln Leu Arg Glu Thr Met His Asn
                20                  25                  30
```

11

```
Met Gln Leu Glu Val Asp Leu Leu Lys Ala Glu Asn Asp Arg Leu Lys
        35              40              45
Val Ala Pro Gly Pro Ser Ser Gly Cys Thr Pro Gly Gln Val Pro Gly
        50              55              60
Ser Ser Ala Leu Ser Ser Pro Arg Arg Ser Leu Gly Leu Ala Leu Ser
65              70              75              80
His Pro Phe Ser Pro Ser Leu Thr Asp Thr Asp Leu Ser Pro Met Asp
                85              90              95
Gly Ile Ser Thr Cys Gly Ser Lys Glu Glu Val Thr Leu Arg Val Val
            100             105             110
Val Arg Met Pro Pro Gln His Ile Ile Lys Gly Asp Leu Lys Gln Gln
        115             120             125
Glu Phe Phe Leu Gly Cys Ser Lys Val Ser Gly Lys Val Asp Trp Lys
    130             135             140
Met Leu Asp Glu Ala Val Phe Gln Val Phe Lys Asp Tyr Ile Ser Lys
145             150             155             160
Met Asp Pro Ala Ser Thr Leu Gly Leu Ser Thr Glu Ser Ile His Gly
            165             170             175
Tyr Ser Leu Ser His Val Lys Arg Val Leu Asp Ala Glu Pro Pro Glu
        180             185             190
Met Pro Pro Cys Arg Arg Gly Val Asn Asn Ile Ser Val Ala Leu Lys
        195             200             205
Gly Leu Lys Glu Lys Cys Val Asp Ser Leu Val Phe Glu Thr Leu Ile
    210             215             220
Pro Lys Pro Met Met Gln His Tyr Ile Ser Leu Leu Leu Lys His Arg
225             230             235             240
Arg Leu Val Leu Ser Gly Pro Ser Gly Thr Gly Lys Thr Tyr Leu Thr
            245             250             255
Asn Arg Leu Ala Glu Tyr Leu Val Glu Arg Ser Gly Arg Glu Val Thr
        260             265             270
Asp Gly Ile Val Ser Thr Phe Asn Met His Gln Gln Ser Cys Lys Asp
        275             280             285
Leu Gln Leu Tyr Leu Ser Asn Leu Ala Asn Gln Ile Asp Arg Glu Thr
        290             295             300
Gly Ile Gly Asp Val Pro Leu Val Ile Leu Leu Asp Asp Leu Ser Glu
305             310             315             320
Ala Gly Ser Ile Ser Glu Leu Val Asn Gly Ala Leu Thr Cys Lys Tyr
```

12

```
                325                      330                      335
His Lys Cys Pro Tyr Ile Ile Gly Thr Thr Asn Gln Pro Val Lys Met
            340                      345                      350

Thr Pro Asn His Gly Leu His Leu Ser Phe Arg Met Leu Thr Phe Ser
            355                      360                      365

Asn Asn Val Glu Pro Ala Asn Gly Phe Leu Val Arg Tyr Leu Arg Arg
            370                      375                      380

Lys Leu Val Glu Ser Asp Ser Asp Val Asn Ala Asn Lys Glu Glu Leu
385                      390                      395                      400

Leu Arg Val Leu Asp Trp Val Pro Lys Leu Trp Tyr His Leu His Thr
            405                      410                      415

Phe Leu Glu Lys His Ser Thr Ser Asp Phe Leu Ile Gly Pro Cys Phe
            420                      425                      430

Phe Leu Ser Cys Pro Ile Gly Ile Glu Asp Phe Arg Thr Trp Phe Ile
            435                      440                      445

Asp Leu Trp Asn Asn Ser Ile Ile Pro Tyr Leu Gln Glu Gly Ala Lys
            450                      455                      460

Asp Gly Ile Lys Val His Gly Gln Lys Ala Ala Trp Glu Asp Pro Val
465                      470                      475                      480

Glu Trp Val Arg Asp Thr Leu Pro Trp Pro Ser Ala Gln Gln Asp Gln
            485                      490                      495

Ser Lys Leu Tyr His Leu Pro Pro Pro Ser Val Gly Pro His Ser Thr
            500                      505                      510

Ala Ser Pro Pro Glu Asp Arg Thr Val Lys Asp Ser Thr Pro Asn Ser
            515                      520                      525

Leu Asp Ser Asp Pro Leu Met Ala Met Leu Leu Lys Leu Gln Glu Ala
            530                      535                      540

Ala Asn Tyr Ile Glu Ser Pro Asp Arg Glu Thr Ile Leu Asp Pro Asn
545                      550                      555                      560

Leu Gln Ala Thr Leu
            565
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<210> 9
<211> 1025
<212> DNA
<213> mouse

<220>
<221> CDS
<223> (1)..(129)

13

<400> 9

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cca ata gaa ctc cgg atc aag agg cag aat tcc tca gat agc atc tcc        48
Pro Ile Glu Leu Arg Ile Lys Arg Gln Asn Ser Ser Asp Ser Ile Ser


agc ctc aac agc atc acc agc cat tcc agc atc ggc agc agc aaa gat        96
Ser Leu Asn Ser Ile Thr Ser His Ser Ser Ile Gly Ser Ser Lys Asp

gct gat gcc aag aag aaa aag aag aag agt tgg gtatgtaaag gcttggggat      149
Ala Asp Ala Lys Lys Lys Lys Lys Lys Ser Trp


cggcctgtgc taggagtcac tcaccctgtt gcagggaact gacccctttc aggatcaaca     209

aagagggtcc cttctaacag gatgccagtg ttgtgacatc tgctggggac aaaaattcac     269

taagttccca ttcctctatc cattgtctat tctccttacc accgccctgc acatataccc     329

cagcccccca ccgtccctgc atcctttata catgtctgct atcctggggc tctacctact     389

gatgaggtca aatgtatttg gccgtagaag gagctgagaa aattattcat gggtgggaga     449

gtggggcatg tggagagaat ttgtaagcca agcagggtac tctagacgct cctggggctg     509

ttgctttagt ttgggtgagg aggctgtgga acgtccccat cgctccaaag cctgcttttg     569

tctggtccag aggtgggttt gttctgtgtg gtatcccccc tgtaactcta aactggcttt     629

gggtgagctt tctacaatct gtacgcaggt gtagggcact gcctgactga ctgaaaggga     689

gagtgaccca gagtgagcgt cttgtccctg tccctgctga ggagggctgg ctacagactt     749

tggcctagtg cagacaggag ccagctgtgt ggagaagcag ctgtgtgaaa tgcatgagta     809

gtgtcgctgc tgctgctgct gctgctttct tttcattgtt tttttttttt tttctttcct     869

tttatttcct tcaaaatgct gacctcaaat ccctattttt tttccaggtt tatgaggtaa     929

gaaactcggt tcctctcctc gtgcttttc  tttcccttg  cacaccttcg tgtttccaga     989

gcaagcacct ctcttaaaaa aaaaaaaaaa aaaaaa                               1025
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<210> 10
<211> 43
<212> PRT
<213> mouse

<400> 10

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Pro Ile Glu Leu Arg Ile Lys Arg Gln Asn Ser Ser Asp Ser Ile Ser
 1               5                   10                  15

Ser Leu Asn Ser Ile Thr Ser His Ser Ser Ile Gly Ser Ser Lys Asp
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14

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         20                25              30
Ala Asp Ala Lys Lys Lys Lys Lys Lys Ser Trp
          35              40
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<210> 11
<211> 8690
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<223> (503)..(6187)

<400> 11

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ttttttttct ccatctcctt aagacgattt ccatagtaac ctgatcaagt ggctcaaaat     120

cgcaaacctg aggatttccg cggcccgccg gcaagacctc ggccaggttt acaggaaatc     180

tgtcattttt tattaaaatg gaaaactgtg aagaagaaa aagatagcag ttgaagtcaa      240

aattctcgga tgactatttt gcttttgagg agtcagcatt taaaaacgat atgctgattt     300

ggaaggtcct gggagtaaac tgcaaacttt attttttcca ttcaatcaat ggatttttta     360

atcattcctt ggagtcgatg aagttcggaa acggtgtgtg atggggaacg tggcgggcca     420

gtgtgttcct agaaattgca tcttggatta gtttgctgct tttttgaaga gattccattt     480

tgaagggcaa gaacctaatg tg atg gat tta tct tca gaa atg aac aga cat     532
                         Met Asp Leu Ser Ser Glu Met Asn Arg His

ggg aag aat cca gtg agt cac aag cta gaa gat cag aag aag att tac     580
Gly Lys Asn Pro Val Ser His Lys Leu Glu Asp Gln Lys Lys Ile Tyr

act gac tgg gcc aac cac tac cta gca aaa tca ggc cac aag cgg ctg     628
Thr Asp Trp Ala Asn His Tyr Leu Ala Lys Ser Gly His Lys Arg Leu

atc aag gac ttg caa caa gac att gca gat gga gta ctc cta gca gaa     676
Ile Lys Asp Leu Gln Gln Asp Ile Ala Asp Gly Val Leu Leu Ala Glu

atc atc cag att att gca aat gaa aaa gtt gaa gat atc aat gga tgt     724
Ile Ile Gln Ile Ile Ala Asn Glu Lys Val Glu Asp Ile Asn Gly Cys

cct aga agt cag tct cag atg att gaa aat gtt gat gtc tgc ctt agt     772
Pro Arg Ser Gln Ser Gln Met Ile Glu Asn Val Asp Val Cys Leu Ser
```

15

```
ttt cta gca gcc aga ggg gta aat gtt caa ggt cta tct gct gaa gaa        820
Phe Leu Ala Ala Arg Gly Val Asn Val Gln Gly Leu Ser Ala Glu Glu


ata aga aat gga aac tta aaa gcc att cta ggg ctg ttt ttc agt tta        868
Ile Arg Asn Gly Asn Leu Lys Ala Ile Leu Gly Leu Phe Phe Ser Leu


tct cgc tac aag cag caa caa cac cat caa caa cag tac tat cag tcc        916
Ser Arg Tyr Lys Gln Gln Gln His His Gln Gln Gln Tyr Tyr Gln Ser


ttg gtg gaa ctt cag cag cga gtt act cac gct tcc cct cca tcg gaa        964
Leu Val Glu Leu Gln Gln Arg Val Thr His Ala Ser Pro Pro Ser Glu


gcc agc cag gcc aaa acc cag caa gat atg cag tcc agg ctt cca ggg       1012
Ala Ser Gln Ala Lys Thr Gln Gln Asp Met Gln Ser Arg Leu Pro Gly


ccc tct agg gtg cct gct gca gga agc agc agc aag gtc cag gga gcc       1060
Pro Ser Arg Val Pro Ala Ala Gly Ser Ser Ser Lys Val Gln Gly Ala


tct aat tta aat agg aga agt cag agc ttt aac agc att gac aaa aac       1108
Ser Asn Leu Asn Arg Arg Ser Gln Ser Phe Asn Ser Ile Asp Lys Asn


aag cct cca aat tat gca aat gga aac gaa aaa ggt gaa gac cct gaa       1156
Lys Pro Pro Asn Tyr Ala Asn Gly Asn Glu Lys Gly Glu Asp Pro Glu


aca aga aga atg aga aca gtt aaa aac ata gca gac ttg agg cag aat       1204
Thr Arg Arg Met Arg Thr Val Lys Asn Ile Ala Asp Leu Arg Gln Asn


tta gaa gag act atg tcc agt ctt cgt ggg act cag ata agc cac agc       1252
Leu Glu Glu Thr Met Ser Ser Leu Arg Gly Thr Gln Ile Ser His Ser


acc ctg gag aca aca ttt gac agc act gtg aca aca gaa gtt aat gga       1300
Thr Leu Glu Thr Thr Phe Asp Ser Thr Val Thr Thr Glu Val Asn Gly


agg acc ata ccc aac ttg aca agt cga ccc acc ccc atg acc tgg agg       1348
Arg Thr Ile Pro Asn Leu Thr Ser Arg Pro Thr Pro Met Thr Trp Arg


ttg ggc cag gca tgt ccg cga ctt cag gcg gga gat gct ccc tcc ctg       1396
Leu Gly Gln Ala Cys Pro Arg Leu Gln Ala Gly Asp Ala Pro Ser Leu


ggt gct ggc tat cct cgc agt ggt acc agt cga ttc atc cac aca gac       1444
Gly Ala Gly Tyr Pro Arg Ser Gly Thr Ser Arg Phe Ile His Thr Asp
```

16

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ccc tcg agg ttc atg tat acc acg cct ctc cgt cga gct gct gtc tct       1492
Pro Ser Arg Phe Met Tyr Thr Thr Pro Leu Arg Arg Ala Ala Val Ser


agg ctg gga aac atg tca cag att gac atg agt gag aaa gca agc agt       1540
Arg Leu Gly Asn Met Ser Gln Ile Asp Met Ser Glu Lys Ala Ser Ser


gac ctg gac atg tct tct gag gtc gat gtg ggt gga tat atg agt gat       1588
Asp Leu Asp Met Ser Ser Glu Val Asp Val Gly Gly Tyr Met Ser Asp


ggt gat atc ctt ggg aaa agt ctc agg act gat gac atc aac agt ggg       1636
Gly Asp Ile Leu Gly Lys Ser Leu Arg Thr Asp Asp Ile Asn Ser Gly


tac atg aca gat gga gga ctt aac cta tat act aga agt ctg aac cga       1684
Tyr Met Thr Asp Gly Gly Leu Asn Leu Tyr Thr Arg Ser Leu Asn Arg


ata cca gac aca gca act tcc cgg gac atc atc cag aga ggg gtt cac       1732
Ile Pro Asp Thr Ala Thr Ser Arg Asp Ile Ile Gln Arg Gly Val His


gat gtg aca gtg gat gca gac agc tgg gat gac agc agt tca gtg agc       1780
Asp Val Thr Val Asp Ala Asp Ser Trp Asp Asp Ser Ser Ser Val Ser


agt ggt ctc agt gac acc ctt gat aac atc agc act gat gac ctg aac       1828
Ser Gly Leu Ser Asp Thr Leu Asp Asn Ile Ser Thr Asp Asp Leu Asn


acc aca tcc tct gtc agc tct tac tcc aac atc acc gtc ccc tct agg       1876
Thr Thr Ser Ser Val Ser Ser Tyr Ser Asn Ile Thr Val Pro Ser Arg


aag aat act cag ctg agg aca gat tca gag aaa cgc tcc acc aca gac       1924
Lys Asn Thr Gln Leu Arg Thr Asp Ser Glu Lys Arg Ser Thr Thr Asp


gag acc tgg gat agt cct gag gaa ctg aaa aaa cca gaa gaa gat ttt       1972
Glu Thr Trp Asp Ser Pro Glu Glu Leu Lys Lys Pro Glu Glu Asp Phe


gac agc cat ggg gat gct ggt ggc aag tgg aag act gtg tcc tct gga       2020
Asp Ser His Gly Asp Ala Gly Gly Lys Trp Lys Thr Val Ser Ser Gly


ctt cct gaa gac ccc gag aag gca ggg cag aaa gct tcc ctg tct gtt       2068
Leu Pro Glu Asp Pro Glu Lys Ala Gly Gln Lys Ala Ser Leu Ser Val


tca cag aca ggt tcc tgg aga aga ggc atg tct gcc caa gga ggg gcg       2116
Ser Gln Thr Gly Ser Trp Arg Arg Gly Met Ser Ala Gln Gly Gly Ala
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17

cca tct agg cag aaa gct gga aca agt gca ctc aaa aca ccc ggg aaa   2164
Pro Ser Arg Gln Lys Ala Gly Thr Ser Ala Leu Lys Thr Pro Gly Lys

acc gat gat gcc aaa gct tct gag aaa gga aaa gct ccc cta aaa gga   2212
Thr Asp Asp Ala Lys Ala Ser Glu Lys Gly Lys Ala Pro Leu Lys Gly

tca tct cta caa aga tct cct tca gat gca gga aaa agc agt gga gat   2260
Ser Ser Leu Gln Arg Ser Pro Ser Asp Ala Gly Lys Ser Ser Gly Asp

gaa ggg aaa aag ccc ccc tca ggc att gga aga tcg act gcc acc agc   2308
Glu Gly Lys Lys Pro Pro Ser Gly Ile Gly Arg Ser Thr Ala Thr Ser

tcc ttt ggc ttt aag aaa cca agt gga gta ggg tca tct gcc atg atc   2356
Ser Phe Gly Phe Lys Lys Pro Ser Gly Val Gly Ser Ser Ala Met Ile

acc agc agt gga gca acc ata aca agt ggc tct gca aca ctg ggt aaa   2404
Thr Ser Ser Gly Ala Thr Ile Thr Ser Gly Ser Ala Thr Leu Gly Lys

att cca aaa tct gct gcc att ggc ggg aag tca aat gca ggg aga aaa   2452
Ile Pro Lys Ser Ala Ala Ile Gly Gly Lys Ser Asn Ala Gly Arg Lys

acc agt ttg gac ggt tca cag aat cag gat gat gtt gtg ctg cat gtt   2500
Thr Ser Leu Asp Gly Ser Gln Asn Gln Asp Asp Val Val Leu His Val

agc tca aag act acc cta caa tat cgc agc ttg ccc cgc cct tca aaa   2548
Ser Ser Lys Thr Thr Leu Gln Tyr Arg Ser Leu Pro Arg Pro Ser Lys

tcc agc acc agt ggc att cct ggc cga gga ggc cac aga tcc agt acc   2596
Ser Ser Thr Ser Gly Ile Pro Gly Arg Gly Gly His Arg Ser Ser Thr

agc agt att gat tcc aac gtc agc agc aag tct gct ggg gcc acc acc   2644
Ser Ser Ile Asp Ser Asn Val Ser Ser Lys Ser Ala Gly Ala Thr Thr

tcg aaa ctg aga gaa cca act aaa att ggg tca ggg cgc tcg agt cct   2692
Ser Lys Leu Arg Glu Pro Thr Lys Ile Gly Ser Gly Arg Ser Ser Pro

gtc acc gtc aac caa aca gac aag gaa aag gaa aaa gta gca gtc tca   2740
Val Thr Val Asn Gln Thr Asp Lys Glu Lys Glu Lys Val Ala Val Ser

gat tca gaa agt gtt tct ttg tca ggt tcc ccc aaa tcc agc ccc acc   2788
Asp Ser Glu Ser Val Ser Leu Ser Gly Ser Pro Lys Ser Ser Pro Thr

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tct gcc agc gcc tgt ggt gca caa ggt ctc agg cag cca gga tcc aag        2836
Ser Ala Ser Ala Cys Gly Ala Gln Gly Leu Arg Gln Pro Gly Ser Lys


tat cca gat att gcc tca ccc aca ttt cga agg ttg ttt ggt gcc aag        2884
Tyr Pro Asp Ile Ala Ser Pro Thr Phe Arg Arg Leu Phe Gly Ala Lys


gca ggt ggc aaa tct gcc tct gca cct aat act gag ggt gtg aaa tct        2932
Ala Gly Gly Lys Ser Ala Ser Ala Pro Asn Thr Glu Gly Val Lys Ser


tcc tca gta atg ccc agc cct agt acc aca tta gcg cgg caa ggc agt        2980
Ser Ser Val Met Pro Ser Pro Ser Thr Thr Leu Ala Arg Gln Gly Ser


ctg gag tca ccg tcg tcc ggt acg ggc agc atg ggc agt gct ggt ggg        3028
Leu Glu Ser Pro Ser Ser Gly Thr Gly Ser Met Gly Ser Ala Gly Gly


cta agc ggc agc agc agc cct ctc ttc aat aaa ccc tca gac tta act        3076
Leu Ser Gly Ser Ser Ser Pro Leu Phe Asn Lys Pro Ser Asp Leu Thr


aca gat gtt ata agc tta agt cac tcg ttg gcc tcc agc cca gca tcg        3124
Thr Asp Val Ile Ser Leu Ser His Ser Leu Ala Ser Ser Pro Ala Ser


gtt cac tct ttc aca tca ggt ggt ctc gtg tgg gct gcc aat atg agc        3172
Val His Ser Phe Thr Ser Gly Gly Leu Val Trp Ala Ala Asn Met Ser


agt tcc tct gca ggc agc aag gat act ccg agc tac cag tcc atg act        3220
Ser Ser Ser Ala Gly Ser Lys Asp Thr Pro Ser Tyr Gln Ser Met Thr


agc ctc cac acg agc tct gag tcc att gac ctc ccc ctc agc cat cat        3268
Ser Leu His Thr Ser Ser Glu Ser Ile Asp Leu Pro Leu Ser His His


ggc tcc ttg tct gga ctg acc aca ggc act cac gag gtc cag agc ctg        3316
Gly Ser Leu Ser Gly Leu Thr Thr Gly Thr His Glu Val Gln Ser Leu


ctc atg aga acg ggt agt gtg aga tct act ctc tca gaa agc atg cag        3364
Leu Met Arg Thr Gly Ser Val Arg Ser Thr Leu Ser Glu Ser Met Gln


ctt gac aga aat aca cta ccc aaa aag gga cta aga tat acc cca tca        3412
Leu Asp Arg Asn Thr Leu Pro Lys Lys Gly Leu Arg Tyr Thr Pro Ser


tct cgg cag gcc aac caa gaa gag ggc aaa gag tgg ttg cgt tct cat        3460
Ser Arg Gln Ala Asn Gln Glu Glu Gly Lys Glu Trp Leu Arg Ser His


tct act gga ggg ctt cag gac act ggc aac cag tca cct ctg gtt tcc        3508
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19

Ser Thr Gly Gly Leu Gln Asp Thr Gly Asn Gln Ser Pro Leu Val Ser

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cct tct gcc atg tca tct tct gca gct gga aaa tac cac ttt tct aac        3556
Pro Ser Ala Met Ser Ser Ser Ala Ala Gly Lys Tyr His Phe Ser Asn


ttg gtg agc cca aca aat ttg tct caa ttt aac ctt ccc ggg ccc agc        3604
Leu Val Ser Pro Thr Asn Leu Ser Gln Phe Asn Leu Pro Gly Pro Ser


atg atg cgc tca aac agc atc cca gcc caa gac tct tcc ttc gat ctc        3652
Met Met Arg Ser Asn Ser Ile Pro Ala Gln Asp Ser Ser Phe Asp Leu


tat gat gac tcc cag ctt tgt ggg agt gcc act tct ctg gag gaa aga        3700
Tyr Asp Asp Ser Gln Leu Cys Gly Ser Ala Thr Ser Leu Glu Glu Arg


cct cgt gcc atc agt cat tcg ggc tca ttc aga gac agc atg gaa gaa        3748
Pro Arg Ala Ile Ser His Ser Gly Ser Phe Arg Asp Ser Met Glu Glu


gtt cat ggc tct tca tta tca ctg gtg tcc agc act tct tct ctt tac        3796
Val His Gly Ser Ser Leu Ser Leu Val Ser Ser Thr Ser Ser Leu Tyr


tct aca gct gaa gaa aag gct cat tca gag caa atc cat aaa ctg cgg        3844
Ser Thr Ala Glu Glu Lys Ala His Ser Glu Gln Ile His Lys Leu Arg


aga gag ctg gtt gca tca caa gaa aaa gtt gct acc ctc aca tct cag        3892
Arg Glu Leu Val Ala Ser Gln Glu Lys Val Ala Thr Leu Thr Ser Gln


ctt tca gca aat gct cac ctt gta gca gct ttt gaa aag agc tta ggg        3940
Leu Ser Ala Asn Ala His Leu Val Ala Ala Phe Glu Lys Ser Leu Gly


aat atg act ggc cga ttg caa agt cta act atg aca gcg gaa caa aag        3988
Asn Met Thr Gly Arg Leu Gln Ser Leu Thr Met Thr Ala Glu Gln Lys


gaa tct gaa ctt ata gaa cta aga gaa acc att gaa atg ctg aag gct        4036
Glu Ser Glu Leu Ile Glu Leu Arg Glu Thr Ile Glu Met Leu Lys Ala


cag aat tct gct gcc cag gcg gct att cag gga gca ctg aat ggt cca        4084
Gln Asn Ser Ala Ala Gln Ala Ala Ile Gln Gly Ala Leu Asn Gly Pro


gac cat cct ccc aaa gat ctt cgc atc aga aga cag cat tcc tct gaa        4132
Asp His Pro Pro Lys Asp Leu Arg Ile Arg Arg Gln His Ser Ser Glu


agt gtt tct agt atc aac agt gcc aca agc cat tcc agt att ggc agt        4180
Ser Val Ser Ser Ile Asn Ser Ala Thr Ser His Ser Ser Ile Gly Ser
```

20

ggt aat gat gcc gac tcc aag aag aag aaa aag aaa aac tgg ctg aga   4228
Gly Asn Asp Ala Asp Ser Lys Lys Lys Lys Lys Lys Asn Trp Leu Arg

agt tct ttc aaa caa gcc ttt ggg aag aaa aag tcc acc aag cct cct   4276
Ser Ser Phe Lys Gln Ala Phe Gly Lys Lys Lys Ser Thr Lys Pro Pro

tca tca cat tct gac att gaa gag ctt act gat tca tcc ctt ccg gca   4324
Ser Ser His Ser Asp Ile Glu Glu Leu Thr Asp Ser Ser Leu Pro Ala

tcc ccc aag tta ccc cat aat gct ggt gac tgt ggc tca gca tcc atg   4372
Ser Pro Lys Leu Pro His Asn Ala Gly Asp Cys Gly Ser Ala Ser Met

aag ccc tca caa tct gct tca gcg atc tgt gaa tgc aca gaa gct gag   4420
Lys Pro Ser Gln Ser Ala Ser Ala Ile Cys Glu Cys Thr Glu Ala Glu

gca gag ata att ctg cag ctg aag agc gag ctc aga gaa aag gaa tta   4468
Ala Glu Ile Ile Leu Gln Leu Lys Ser Glu Leu Arg Glu Lys Glu Leu

aaa tta acg gat att cgg ctg gag gcc ctc agc tct gct cat cat ctt   4516
Lys Leu Thr Asp Ile Arg Leu Glu Ala Leu Ser Ser Ala His His Leu

gat cag atc cgg gaa gcc atg aac cgg atg cag aat gaa att gaa ata   4564
Asp Gln Ile Arg Glu Ala Met Asn Arg Met Gln Asn Glu Ile Glu Ile

ctg aaa gct gaa aat gac cgg ttg aag gca gaa act ggt aac aca gct   4612
Leu Lys Ala Glu Asn Asp Arg Leu Lys Ala Glu Thr Gly Asn Thr Ala

aag cct act cgg cca ccg tca gaa tcc tca agc agc acc tcc tct tca   4660
Lys Pro Thr Arg Pro Pro Ser Glu Ser Ser Ser Ser Thr Ser Ser Ser

tct tcc agg cag tca tta gga ctt tct cta aac aat ttg aac atc aca   4708
Ser Ser Arg Gln Ser Leu Gly Leu Ser Leu Asn Asn Leu Asn Ile Thr

gag gct gtt agc tca gat att ttg cta gat gat gct ggt gat gca act   4756
Glu Ala Val Ser Ser Asp Ile Leu Leu Asp Asp Ala Gly Asp Ala Thr

gga cat aaa gat ggc cgc agt gtg aaa att ata gtc tcc ata agc aag   4804
Gly His Lys Asp Gly Arg Ser Val Lys Ile Ile Val Ser Ile Ser Lys

ggc tat ggt cga gca aag gac caa aaa tct cag gca tat ttg ata gga   4852
Gly Tyr Gly Arg Ala Lys Asp Gln Lys Ser Gln Ala Tyr Leu Ile Gly

21

```
tcc att ggt gtt agt gga aaa acc aag tgg gat gtc tta gat ggt gta      4900
Ser Ile Gly Val Ser Gly Lys Thr Lys Trp Asp Val Leu Asp Gly Val


ata aga cgt ctc ttt aag gaa tat gta ttc cga att gat aca tcc act      4948
Ile Arg Arg Leu Phe Lys Glu Tyr Val Phe Arg Ile Asp Thr Ser Thr


agc ctt ggt ctg agc tct gac tgc att gct agc tac tgt ata gga gac      4996
Ser Leu Gly Leu Ser Ser Asp Cys Ile Ala Ser Tyr Cys Ile Gly Asp


tta att aga tcc cat aac cta gaa gtg cct gaa ttg ctg cct tgt gga      5044
Leu Ile Arg Ser His Asn Leu Glu Val Pro Glu Leu Leu Pro Cys Gly


tac ctt gtt gga gat aat aac atc atc act gtg aac ctc aaa ggg gta      5092
Tyr Leu Val Gly Asp Asn Asn Ile Ile Thr Val Asn Leu Lys Gly Val


gaa gaa aat agt ttg gac agt ttt gtt ttt gat acg ctg att cct aaa      5140
Glu Glu Asn Ser Leu Asp Ser Phe Val Phe Asp Thr Leu Ile Pro Lys


cca att acc caa agg tac ttt aac ttg ttg atg gag cat cac aga att      5188
Pro Ile Thr Gln Arg Tyr Phe Asn Leu Leu Met Glu His His Arg Ile


ata ctc tca gga ccg agt ggt act gga aag acc tat ttg gca aac aaa      5236
Ile Leu Ser Gly Pro Ser Gly Thr Gly Lys Thr Tyr Leu Ala Asn Lys


ctt gct gaa tat gta ata acc aaa tct gga agg aaa aaa aca gag gat      5284
Leu Ala Glu Tyr Val Ile Thr Lys Ser Gly Arg Lys Lys Thr Glu Asp


gca att gcc act ttt aat gtg gac cac aag tca agt aag gaa ttg caa      5332
Ala Ile Ala Thr Phe Asn Val Asp His Lys Ser Ser Lys Glu Leu Gln


caa tat cta gct aac ctg gct gaa cag tgc agt gct gat aat aat gga      5380
Gln Tyr Leu Ala Asn Leu Ala Glu Gln Cys Ser Ala Asp Asn Asn Gly


gtg gag ctc cca gtt gta ata att ctt gat aat ctt cat cat gtg ggc      5428
Val Glu Leu Pro Val Val Ile Ile Leu Asp Asn Leu His His Val Gly


tct ctg agt gat atc ttc aat ggt ttt ctc aat tgt aaa tac aac aaa      5476
Ser Leu Ser Asp Ile Phe Asn Gly Phe Leu Asn Cys Lys Tyr Asn Lys


tgt cca tat att att gga aca atg aat cag gga gtt tct tca tca cca      5524
Cys Pro Tyr Ile Ile Gly Thr Met Asn Gln Gly Val Ser Ser Ser Pro
```

22

```
aat cta gag ctg cat cac aat ttc agg tgg gta tta tgt gca aat cat          5572
Asn Leu Glu Leu His His Asn Phe Arg Trp Val Leu Cys Ala Asn His


aca gaa cca gtg aaa ggc ttt tta ggc aga tat ctt cga aga aaa ctc          5620
Thr Glu Pro Val Lys Gly Phe Leu Gly Arg Tyr Leu Arg Arg Lys Leu


ata gag ata gaa att gaa agg aac att cgc aat aat gac cta gtc aaa          5668
Ile Glu Ile Glu Ile Glu Arg Asn Ile Arg Asn Asn Asp Leu Val Lys


att ata gat tgg att ccg aag acg tgg cat cat ctc aac agt ttt ttg          5716
Ile Ile Asp Trp Ile Pro Lys Thr Trp His His Leu Asn Ser Phe Leu


gaa aca cac agt tct tct gac gtt acc att ggt ccc cga cta ttc ctt          5764
Glu Thr His Ser Ser Ser Asp Val Thr Ile Gly Pro Arg Leu Phe Leu


cct tgc ccc atg gat gta gaa ggt tct aga gta tgg ttc atg gat ctc          5812
Pro Cys Pro Met Asp Val Glu Gly Ser Arg Val Trp Phe Met Asp Leu


tgg aac tat tct tta gta cct tat att ctg gag gca gtg aga gag ggt          5860
Trp Asn Tyr Ser Leu Val Pro Tyr Ile Leu Glu Ala Val Arg Glu Gly


ctt cag atg tat ggg aaa cgc aca cca tgg gaa gat cct tca aag tgg          5908
Leu Gln Met Tyr Gly Lys Arg Thr Pro Trp Glu Asp Pro Ser Lys Trp


gtg ctt gac aca tat cca tgg agc tca gca act ctg cct cag gag agc          5956
Val Leu Asp Thr Tyr Pro Trp Ser Ser Ala Thr Leu Pro Gln Glu Ser


cca gcc tta ctt cag ctg cga cca gaa gat gtt ggg tat gaa agc tgc          6004
Pro Ala Leu Leu Gln Leu Arg Pro Glu Asp Val Gly Tyr Glu Ser Cys


aca tcc act aag gaa gcc aca acc tca aag cac att cca caa act gac          6052
Thr Ser Thr Lys Glu Ala Thr Thr Ser Lys His Ile Pro Gln Thr Asp


aca gaa gga gat ccc ctg atg aat atg cta atg aaa ctc caa gaa gca          6100
Thr Glu Gly Asp Pro Leu Met Asn Met Leu Met Lys Leu Gln Glu Ala


gcc aat tac tcg agc aca caa agc tgc gac agc gaa agc acc agt cac          6148
Ala Asn Tyr Ser Ser Thr Gln Ser Cys Asp Ser Glu Ser Thr Ser His


cat gaa gac att ttg gat tca tct ctt gaa tct acc ctc tagagggtga          6197
His Glu Asp Ile Leu Asp Ser Ser Leu Glu Ser Thr Leu


aaaaagttaa gggaaaagac tttgctttta aaaaatgtt tcaaaagaaa ggtattttca          6257
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23

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24

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<400> 12

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His Lys Leu Glu Asp Gln Lys Lys Ile Tyr Thr Asp Trp Ala Asn His
            20                  25                  30

Tyr Leu Ala Lys Ser Gly His Lys Arg Leu Ile Lys Asp Leu Gln Gln
        35                  40                  45

Asp Ile Ala Asp Gly Val Leu Leu Ala Glu Ile Ile Gln Ile Ile Ala
    50                  55                  60

Asn Glu Lys Val Glu Asp Ile Asn Gly Cys Pro Arg Ser Gln Ser Gln
65                  70                  75                  80

Met Ile Glu Asn Val Asp Val Cys Leu Ser Phe Leu Ala Ala Arg Gly
                85                  90                  95

Val Asn Val Gln Gly Leu Ser Ala Glu Glu Ile Arg Asn Gly Asn Leu
                100                 105                 110

Lys Ala Ile Leu Gly Leu Phe Phe Ser Leu Ser Arg Tyr Lys Gln Gln
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25

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Gln His His Gln Gln Gln Tyr Tyr Gln Ser Leu Val Glu Leu Gln Gln
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Arg Val Thr His Ala Ser Pro Pro Ser Glu Ala Ser Gln Ala Lys Thr
145                      150                      155                      160
Gln Gln Asp Met Gln Ser Arg Leu Pro Gly Pro Ser Arg Val Pro Ala
                    165                      170                      175
Ala Gly Ser Ser Ser Lys Val Gln Gly Ala Ser Asn Leu Asn Arg Arg
                    180                      185                      190
Ser Gln Ser Phe Asn Ser Ile Asp Lys Asn Lys Pro Pro Asn Tyr Ala
                    195                      200                      205
Asn Gly Asn Glu Lys Gly Glu Asp Pro Glu Thr Arg Arg Met Arg Thr
    210                      215                      220
Val Lys Asn Ile Ala Asp Leu Arg Gln Asn Leu Glu Glu Thr Met Ser
225                      230                      235                      240
Ser Leu Arg Gly Thr Gln Ile Ser His Ser Thr Leu Glu Thr Thr Phe
                    245                      250                      255
Asp Ser Thr Val Thr Thr Glu Val Asn Gly Arg Thr Ile Pro Asn Leu
                    260                      265                      270
Thr Ser Arg Pro Thr Pro Met Thr Trp Arg Leu Gly Gln Ala Cys Pro
                    275                      280                      285
Arg Leu Gln Ala Gly Asp Ala Pro Ser Leu Gly Ala Gly Tyr Pro Arg
    290                      295                      300
Ser Gly Thr Ser Arg Phe Ile His Thr Asp Pro Ser Arg Phe Met Tyr
305                      310                      315                      320
Thr Thr Pro Leu Arg Arg Ala Ala Val Ser Arg Leu Gly Asn Met Ser
                    325                      330                      335
Gln Ile Asp Met Ser Glu Lys Ala Ser Ser Asp Leu Asp Met Ser Ser
                    340                      345                      350
Glu Val Asp Val Gly Gly Tyr Met Ser Asp Gly Asp Ile Leu Gly Lys
                    355                      360                      365
Ser Leu Arg Thr Asp Asp Ile Asn Ser Gly Tyr Met Thr Asp Gly Gly
    370                      375                      380
Leu Asn Leu Tyr Thr Arg Ser Leu Asn Arg Ile Pro Asp Thr Ala Thr
385                      390                      395                      400
Ser Arg Asp Ile Ile Gln Arg Gly Val His Asp Val Thr Val Asp Ala
                    405                      410                      415
Asp Ser Trp Asp Asp Ser Ser Ser Val Ser Ser Gly Leu Ser Asp Thr
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26

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                420                425                   430
Leu Asp Asn Ile Ser Thr Asp Asp Leu Asn Thr Thr Ser Ser Val Ser
        435                440                445

Ser Tyr Ser Asn Ile Thr Val Pro Ser Arg Lys Asn Thr Gln Leu Arg
    450                455                460

Thr Asp Ser Glu Lys Arg Ser Thr Thr Asp Glu Thr Trp Asp Ser Pro
465                470                475                480

Glu Glu Leu Lys Lys Pro Glu Glu Asp Phe Asp Ser His Gly Asp Ala
                485                490                495

Gly Gly Lys Trp Lys Thr Val Ser Ser Gly Leu Pro Glu Asp Pro Glu
            500                505                510

Lys Ala Gly Gln Lys Ala Ser Leu Ser Val Ser Gln Thr Gly Ser Trp
            515                520                525

Arg Arg Gly Met Ser Ala Gln Gly Gly Ala Pro Ser Arg Gln Lys Ala
    530                535                540

Gly Thr Ser Ala Leu Lys Thr Pro Gly Lys Thr Asp Asp Ala Lys Ala
545                550                555                560

Ser Glu Lys Gly Lys Ala Pro Leu Lys Gly Ser Ser Leu Gln Arg Ser
                565                570                575

Pro Ser Asp Ala Gly Lys Ser Ser Gly Asp Glu Gly Lys Lys Pro Pro
                580                585                590

Ser Gly Ile Gly Arg Ser Thr Ala Thr Ser Ser Phe Gly Phe Lys Lys
                595                600                605

Pro Ser Gly Val Gly Ser Ser Ala Met Ile Thr Ser Ser Gly Ala Thr
    610                615                620

Ile Thr Ser Gly Ser Ala Thr Leu Gly Lys Ile Pro Lys Ser Ala Ala
625                630                635                640

Ile Gly Gly Lys Ser Asn Ala Gly Arg Lys Thr Ser Leu Asp Gly Ser
                645                650                655

Gln Asn Gln Asp Asp Val Val Leu His Val Ser Ser Lys Thr Thr Leu
                660                665                670

Gln Tyr Arg Ser Leu Pro Arg Pro Ser Lys Ser Ser Thr Ser Gly Ile
            675                680                685

Pro Gly Arg Gly Gly His Arg Ser Ser Thr Ser Ser Ile Asp Ser Asn
            690                695                700

Val Ser Ser Lys Ser Ala Gly Ala Thr Thr Ser Lys Leu Arg Glu Pro
705                710                715                720
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27

Thr Lys Ile Gly Ser Gly Arg Ser Ser Pro Val Thr Val Asn Gln Thr
            725   730   735

Asp Lys Glu Lys Glu Lys Val Ala Val Ser Asp Ser Glu Ser Val Ser
            740   745   750

Leu Ser Gly Ser Pro Lys Ser Ser Pro Thr Ser Ala Ser Ala Cys Gly
            755   760   765

Ala Gln Gly Leu Arg Gln Pro Gly Ser Lys Tyr Pro Asp Ile Ala Ser
            770   775   780

Pro Thr Phe Arg Arg Leu Phe Gly Ala Lys Ala Gly Gly Lys Ser Ala
785   790   795   800

Ser Ala Pro Asn Thr Glu Gly Val Lys Ser Ser Ser Val Met Pro Ser
            805   810   815

Pro Ser Thr Thr Leu Ala Arg Gln Gly Ser Leu Glu Ser Pro Ser Ser
            820   825   830

Gly Thr Gly Ser Met Gly Ser Ala Gly Gly Leu Ser Gly Ser Ser Ser
            835   840   845

Pro Leu Phe Asn Lys Pro Ser Asp Leu Thr Thr Asp Val Ile Ser Leu
            850   855   860

Ser His Ser Leu Ala Ser Ser Pro Ala Ser Val His Ser Phe Thr Ser
865   870   875   880

Gly Gly Leu Val Trp Ala Ala Asn Met Ser Ser Ser Ser Ala Gly Ser
            885   890   895

Lys Asp Thr Pro Ser Tyr Gln Ser Met Thr Ser Leu His Thr Ser Ser
            900   905   910

Glu Ser Ile Asp Leu Pro Leu Ser His His Gly Ser Leu Ser Gly Leu
            915   920   925

Thr Thr Gly Thr His Glu Val Gln Ser Leu Leu Met Arg Thr Gly Ser
            930   935   940

Val Arg Ser Thr Leu Ser Glu Ser Met Gln Leu Asp Arg Asn Thr Leu
945   950   955   960

Pro Lys Lys Gly Leu Arg Tyr Thr Pro Ser Ser Arg Gln Ala Asn Gln
            965   970   975

Glu Glu Gly Lys Glu Trp Leu Arg Ser His Ser Thr Gly Gly Leu Gln
            980   985   990

Asp Thr Gly Asn Gln Ser Pro Leu Val Ser Pro Ser Ala Met Ser Ser
            995   1000   1005

Ser Ala Ala Gly Lys Tyr His Phe Ser Asn Leu Val Ser Pro Thr Asn
            1010   1015   1020

28

```
Leu Ser Gln Phe Asn Leu Pro Gly Pro Ser Met Met Arg Ser Asn Ser
1025                1030            1035                1040

Ile Pro Ala Gln Asp Ser Ser Phe Asp Leu Tyr Asp Asp Ser Gln Leu
             1045            1050            1055

Cys Gly Ser Ala Thr Ser Leu Glu Glu Arg Pro Arg Ala Ile Ser His
         1060            1065            1070

Ser Gly Ser Phe Arg Asp Ser Met Glu Glu Val His Gly Ser Ser Leu
         1075            1080            1085

Ser Leu Val Ser Ser Thr Ser Ser Leu Tyr Ser Thr Ala Glu Glu Lys
     1090            1095            1100

Ala His Ser Glu Gln Ile His Lys Leu Arg Arg Glu Leu Val Ala Ser
1105                1110            1115                1120

Gln Glu Lys Val Ala Thr Leu Thr Ser Gln Leu Ser Ala Asn Ala His
             1125            1130            1135

Leu Val Ala Ala Phe Glu Lys Ser Leu Gly Asn Met Thr Gly Arg Leu
         1140            1145            1150


Gln Ser Leu Thr Met Thr Ala Glu Gln Lys Glu Ser Glu Leu Ile Glu
         1155            1160            1165

Leu Arg Glu Thr Ile Glu Met Leu Lys Ala Gln Asn Ser Ala Ala Gln
         1170            1175            1180

Ala Ala Ile Gln Gly Ala Leu Asn Gly Pro Asp His Pro Pro Lys Asp
1185                1190            1195                1200

Leu Arg Ile Arg Arg Gln His Ser Ser Glu Ser Val Ser Ser Ile Asn
             1205            1210            1215

Ser Ala Thr Ser His Ser Ser Ile Gly Ser Gly Asn Asp Ala Asp Ser
             1220            1225            1230

Lys Lys Lys Lys Lys Lys Asn Trp Leu Arg Ser Ser Phe Lys Gln Ala
         1235            1240            1245

Phe Gly Lys Lys Lys Ser Thr Lys Pro Pro Ser Ser His Ser Asp Ile
     1250            1255            1260

Glu Glu Leu Thr Asp Ser Ser Leu Pro Ala Ser Pro Lys Leu Pro His
1265            1270            1275            1280

Asn Ala Gly Asp Cys Gly Ser Ala Ser Met Lys Pro Ser Gln Ser Ala
             1285            1290            1295

Ser Ala Ile Cys Glu Cys Thr Glu Ala Glu Ala Glu Ile Ile Leu Gln
         1300            1305            1310

Leu Lys Ser Glu Leu Arg Glu Lys Glu Leu Lys Leu Thr Asp Ile Arg
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29

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              1315                1320                 1325
Leu Glu Ala Leu Ser Ser Ala His His Leu Asp Gln Ile Arg Glu Ala
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Met Asn Arg Met Gln Asn Glu Ile Glu Ile Leu Lys Ala Glu Asn Asp
1345                1350                1355                1360
Arg Leu Lys Ala Glu Thr Gly Asn Thr Ala Lys Pro Thr Arg Pro Pro
                1365                1370                1375
Ser Glu Ser Ser Ser Ser Thr Ser Ser Ser Ser Ser Arg Gln Ser Leu
                1380                1385                1390
Gly Leu Ser Leu Asn Asn Leu Asn Ile Thr Glu Ala Val Ser Ser Asp
                1395                1400                1405
Ile Leu Leu Asp Asp Ala Gly Asp Ala Thr Gly His Lys Asp Gly Arg
                1410                1415                1420
Ser Val Lys Ile Ile Val Ser Ile Ser Lys Gly Tyr Gly Arg Ala Lys
1425                1430                1435                1440
Asp Gln Lys Ser Gln Ala Tyr Leu Ile Gly Ser Ile Gly Val Ser Gly
                1445                1450                1455
Lys Thr Lys Trp Asp Val Leu Asp Gly Val Ile Arg Arg Leu Phe Lys
                1460                1465                1470
Glu Tyr Val Phe Arg Ile Asp Thr Ser Thr Ser Leu Gly Leu Ser Ser
                1475                1480                1485
Asp Cys Ile Ala Ser Tyr Cys Ile Gly Asp Leu Ile Arg Ser His Asn
                1490                1495                1500

Leu Glu Val Pro Glu Leu Leu Pro Cys Gly Tyr Leu Val Gly Asp Asn
1505                1510                1515                1520
Asn Ile Ile Thr Val Asn Leu Lys Gly Val Glu Glu Asn Ser Leu Asp
                1525                1530                1535
Ser Phe Val Phe Asp Thr Leu Ile Pro Lys Pro Ile Thr Gln Arg Tyr
                1540                1545                1550

Phe Asn Leu Leu Met Glu His His Arg Ile Ile Leu Ser Gly Pro Ser
                1555                1560                1565
Gly Thr Gly Lys Thr Tyr Leu Ala Asn Lys Leu Ala Glu Tyr Val Ile
                1570                1575                1580
Thr Lys Ser Gly Arg Lys Lys Thr Glu Asp Ala Ile Ala Thr Phe Asn
1585                1590                1595                1600
Val Asp His Lys Ser Ser Lys Glu Leu Gln Gln Tyr Leu Ala Asn Leu
                1605                1610                1615
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30

Ala Glu Gln Cys Ser Ala Asp Asn Asn Gly Val Glu Leu Pro Val Val
          1620   1625   1630

Ile Ile Leu Asp Asn Leu His His Val Gly Ser Leu Ser Asp Ile Phe
          1635   1640   1645

Asn Gly Phe Leu Asn Cys Lys Tyr Asn Lys Cys Pro Tyr Ile Ile Gly
          1650   1655   1660

Thr Met Asn Gln Gly Val Ser Ser Ser Pro Asn Leu Glu Leu His His
1665   1670   1675   1680

Asn Phe Arg Trp Val Leu Cys Ala Asn His Thr Glu Pro Val Lys Gly
          1685   1690   1695

Phe Leu Gly Arg Tyr Leu Arg Arg Lys Leu Ile Glu Ile Glu Ile Glu
          1700   1705   1710

Arg Asn Ile Arg Asn Asn Asp Leu Val Lys Ile Ile Asp Trp Ile Pro
          1715   1720   1725

Lys Thr Trp His His Leu Asn Ser Phe Leu Glu Thr His Ser Ser Ser
          1730   1735   1740

Asp Val Thr Ile Gly Pro Arg Leu Phe Leu Pro Cys Pro Met Asp Val
1745   1750   1755   1760

Glu Gly Ser Arg Val Trp Phe Met Asp Leu Trp Asn Tyr Ser Leu Val
          1765   1770   1775

Pro Tyr Ile Leu Glu Ala Val Arg Glu Gly Leu Gln Met Tyr Gly Lys
          1780   1785   1790

Arg Thr Pro Trp Glu Asp Pro Ser Lys Trp Val Leu Asp Thr Tyr Pro
          1795   1800   1805

Trp Ser Ser Ala Thr Leu Pro Gln Glu Ser Pro Ala Leu Leu Gln Leu
          1810   1815   1820

Arg Pro Glu Asp Val Gly Tyr Glu Ser Cys Thr Ser Thr Lys Glu Ala
1825   1830   1835   1840

Thr Thr Ser Lys His Ile Pro Gln Thr Asp Thr Glu Gly Asp Pro Leu
          1845   1850   1855

Met Asn Met Leu Met Lys Leu Gln Glu Ala Ala Asn Tyr Ser Ser Thr
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Gln Ser Cys Asp Ser Glu Ser Thr Ser His His Glu Asp Ile Leu Asp
          1875   1880   1885

Ser Ser Leu Glu Ser Thr Leu
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<213> Homo sapiens

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32

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33

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<213> Homo sapiens

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34

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35

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<211> 2119
<212> DNA
<213> Homo sapiens

<400> 15

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36

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gtttgttaca tcattatgac acaagtccaa catgagtctt gtgaattgca tgctaaatct      180

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atacatacct tccctatcta tgcttagaag gcagtgcaaa attagatagt agcaatattg      1860
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37

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attataacca caaggtggag acagatgtca tgtaatatgc agtctgctca tataaagcac     1920

atttcttag acaagagttt tcatacgata taataaagac atctggaatt tgtcttgtat     1980

gcaatatgaa atttgctatt aaacgtggag ttaaaacttt atgtcaatag atccaataac     2040

aatgttcata aattaatcat tatgtcatgc tgtatttcca aaatactatc ttaaattata     2100

agagcaaacg aggtaataa                                                  2119
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<210> 16
<211> 2103
<212> DNA
<213> Homo sapiens

<400> 16
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agtttgcata tataacttgg gtgtgaccaa gcaaggtgag agttaagaac ttttaaaact     180

tactgtatta tattgataga actcagaaag tactaacttg aatattatta ttctaattgc     240

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tatacattct ttaacaactc tgagaggatg agttacataa atcagttcag gaatctatag     420

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aaaacaaatt gttgaaagta cagtggcttt tcatatgtat gatttgtaaa acaaattagc     540

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38

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agactaaata gacttggcca tatgtgttgt tggtttatgc atacatgcac aaatattgag      1920

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<211> 4260
<212> DNA
<213> Homo sapiens

<400> 17


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40

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41

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gagtgtctaa ggcacactct ttctcccatc tctctcttct ttcttctcca ttctttccac   4200

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<210> 18
<211> 2429
<212> DNA
<213> Homo sapiens

<400> 18

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agaacaacgt aaagacctag ataggtatct aataaattgg gacctgtgaa aacagtgcct    600

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aagacagatt ctcagcttca tccaagactt actgaattag aatatctcaa ggtaaggcct    720

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tgagaatatt gatatgttag aatacactga tgcactaatt tttaaattag atcaaataat    960

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taagtcattt ttaaaagaat aattttaact tgagctgctt gcataaatta aattgcaaaa      1080

aggtcatagt ataaatcctc ctattagcag agatagaagg tttttaaaaa aattacagat      1140

aagtctgaag gtcttttaaa atcttatatt caggaagtga ctcgggatgt atatcatttt      1200

aaaatacatg gtcttaaatg ttgtagttgt atgactcttt cagttaattt aaaatacttc      1260

cttctatgaa aaattgtttc aaaaattttt ctaaattctg ttatccattt caagtaggat      1320

aggcaagaac agatataaga tactactttt ttgttcatgt ttactaaaaa aaaaattact      1380

gtaattgaga tcatgtaaaa acatgtttcc tgtctatttg tcttaacctt ttaatcctgg      1440

caccttaaat ttgacatagt aggaattaga agacaattgc agaaaatgtc aactggggaa      1500

attttattct actaaaaact atgtccatac aacatagcaa atcacatttt aaaggccaaa      1560

aagtctttca tagcaatttt tcagattatt ttcaaagcat atcttctctc tgctcctgca      1620

gcatgccgtt gattttctg ttatgcagtc acataagtaa ttacatgttt acatgtctat      1680

ttcactcata gaacacgaaa cagttaaatg tagaataata tccaatccat ctttttatca      1740

ccagtagcta gcatactgta ggaactcaat aaatatatca gataaattgt ggaaataacc      1800

atatcagctt ataacatata gaaatgtgag tttaaaaaga aaacaattat acatatgaaa      1860

aaatttttat accatttttt taaagacctt tcagatgtca tacagtttgg acttttccag      1920

tgtttcttgt atcatgagac aatagtagac attgtaaatc aaaaatagtt ttctggggtt      1980

gtgtacattt gaaaaaactg aatatcatat ctgttcttag agagtaatga tggatattaa      2040

catatcaaag gtacagagaa gtcttaaagt tcaaagtaac atctgcttaa ttgtatttaa      2100

ttcagtgctc catgagcttt tttatcactg attccctccc tttttttctct tatgataata      2160

attaacttgt tcctgtagca ttttaagaaa tgttgattta gttgaatgcc ttcacttctc      2220

caatataata gcagaaactc agaaatattt atttacccag aatcatgcag ctaatagtac      2280

aaggattcag gtcttttact tcctatttg tggttcccaa ctacttttgc caaaggtctt      2340

ttaaataata tgaaacatat tagtgattga ttcattatag taaatgggta aatgataagg      2400

cttgcaataa ttcactgaca agaaagctt                                      2429
```

<210> 19
<211> 2926
<212> DNA
<213> mouse

<220>
<221> CDS

43

<222> (2)...(2926)

<400> 19

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a agc cac agc acc ctg gag aca acc ttt gat acg act gtg aca act          46
  Ser His Ser Thr Leu Glu Thr Thr Phe Asp Thr Thr Val Thr Thr


gaa gtg aat gga agg gcc atc ccc aac ctg aca agc cga cct tcc ccc        94
Glu Val Asn Gly Arg Ala Ile Pro Asn Leu Thr Ser Arg Pro Ser Pro


atg acc tgg aga ctg ggt caa gcg tgc cct cgt cta cag gct gga gat       142
Met Thr Trp Arg Leu Gly Gln Ala Cys Pro Arg Leu Gln Ala Gly Asp


gcc ccc tcc atg ggc gct gga tat tct cga agc ggt acc agc cga ttc       190
Ala Pro Ser Met Gly Ala Gly Tyr Ser Arg Ser Gly Thr Ser Arg Phe


atc cac acg gat ccc tcc agg ttt atg tat acc acg cct ctc cgc cga       238
Ile His Thr Asp Pro Ser Arg Phe Met Tyr Thr Thr Pro Leu Arg Arg


gct gct gtc tcg cgt ctg gga aac atg tca caa ata gat atg agc gag       286
Ala Ala Val Ser Arg Leu Gly Asn Met Ser Gln Ile Asp Met Ser Glu


aaa gca agc agt gac ctg gat gtg tct tct gaa gtg gat gtt ggt gga       334
Lys Ala Ser Ser Asp Leu Asp Val Ser Ser Glu Val Asp Val Gly Gly


tac atg agc gat ggt gat atc ctt ggg aag agt ctg aga gcg gat gat       382
Tyr Met Ser Asp Gly Asp Ile Leu Gly Lys Ser Leu Arg Ala Asp Asp


atc aac agt ggg tac atg aca gat ggt ggg ctc aac cta tat acc aga       430
Ile Asn Ser Gly Tyr Met Thr Asp Gly Gly Leu Asn Leu Tyr Thr Arg


agt ctt aac cga gtc ccg gac aca gca act tcc aga gat gtc ata cag       478
Ser Leu Asn Arg Val Pro Asp Thr Ala Thr Ser Arg Asp Val Ile Gln


aga ggc gtt cac gat gtg aca gtg gac gca gac agc tgg gat gac agc       526
Arg Gly Val His Asp Val Thr Val Asp Ala Asp Ser Trp Asp Asp Ser


agt tct gtg agc agt ggc ctc agt gac aca ctt gat aac att agc aca       574
Ser Ser Val Ser Ser Gly Leu Ser Asp Thr Leu Asp Asn Ile Ser Thr


gat gac ctc aac acc acg tcc tcc atc agt tct tac tcc aac atc act       622
Asp Asp Leu Asn Thr Thr Ser Ser Ile Ser Ser Tyr Ser Asn Ile Thr
```

44

```
gtc ccc tcc agg aag aac act cag ctg aaa aca gat gcg gag aaa cgt        670
Val Pro Ser Arg Lys Asn Thr Gln Leu Lys Thr Asp Ala Glu Lys Arg


tcg aca aca gat gag acc tgg gat agt cct gag gag ctg aag aaa gcc        718
Ser Thr Thr Asp Glu Thr Trp Asp Ser Pro Glu Glu Leu Lys Lys Ala


gag gga gat tgt gac agc cat ggt gac gga gcc gcc aag tgg aag ggt        766
Glu Gly Asp Cys Asp Ser His Gly Asp Gly Ala Ala Lys Trp Lys Gly


gct act tct gga ctt gct gaa gac tcg gag aag aca ggg cag aaa gcc        814
Ala Thr Ser Gly Leu Ala Glu Asp Ser Glu Lys Thr Gly Gln Lys Ala


agc ctg tct gtg tct cag aca ggc tcc tgg agg aga ggc atg tct gcc        862
Ser Leu Ser Val Ser Gln Thr Gly Ser Trp Arg Arg Gly Met Ser Ala


cag gga gga act cca gct aca gct agg cag aaa acc agc aca agt gca        910
Gln Gly Gly Thr Pro Ala Thr Ala Arg Gln Lys Thr Ser Thr Ser Ala


ctc aag acc cct ggg aag aca gat gat gcc aaa gct tcc gag aaa ggg        958
Leu Lys Thr Pro Gly Lys Thr Asp Asp Ala Lys Ala Ser Glu Lys Gly


aaa act cct ctc aaa gga tca tcc ttg caa agg tct cct tca gat gca       1006
Lys Thr Pro Leu Lys Gly Ser Ser Leu Gln Arg Ser Pro Ser Asp Ala


ggg aaa agc agc ggg gat gaa ggg aaa aag cca ccg tca ggc att gga       1054
Gly Lys Ser Ser Gly Asp Glu Gly Lys Lys Pro Pro Ser Gly Ile Gly


aga tcg aca gcc agc agt tct ttt gga tac aag aag cca agt ggt gta       1102
Arg Ser Thr Ala Ser Ser Ser Phe Gly Tyr Lys Lys Pro Ser Gly Val


ggg gct tcc act atg att acc agc agc ggt gcc acc atc aca agc ggt       1150
Gly Ala Ser Thr Met Ile Thr Ser Ser Gly Ala Thr Ile Thr Ser Gly


tca gct aca ctg ggg aaa atc ccc aaa tcc gct gcc att ggt ggg aag       1198
Ser Ala Thr Leu Gly Lys Ile Pro Lys Ser Ala Ala Ile Gly Gly Lys


tcc aat gca gga agg aaa acc agc ctg gac ggg tcc cag aat caa gat       1246
Ser Asn Ala Gly Arg Lys Thr Ser Leu Asp Gly Ser Gln Asn Gln Asp


gat gtt gtc ctg cac gtg agc tcg aag acc acc ctc cag tac cgt agt       1294
Asp Val Val Leu His Val Ser Ser Lys Thr Thr Leu Gln Tyr Arg Ser


ttg ccc cgc cct tct aag tcc agc acc agc gga atc cct ggg aga ggt       1342
Leu Pro Arg Pro Ser Lys Ser Ser Thr Ser Gly Ile Pro Gly Arg Gly
```

45

```
ggc cac agg tcg agc acc agc agc att gat tcc aat gtc agc agc aag      1390
Gly His Arg Ser Ser Thr Ser Ser Ile Asp Ser Asn Val Ser Ser Lys


tca gct ggg gcc acc acc tcc aaa ctg aga gaa ccg act aag atc ggc      1438
Ser Ala Gly Ala Thr Thr Ser Lys Leu Arg Glu Pro Thr Lys Ile Gly


tca ggg cgc tcg agt cca gtc act gtc aac caa aca gac aaa gag aag      1486
Ser Gly Arg Ser Ser Pro Val Thr Val Asn Gln Thr Asp Lys Glu Lys


gag aaa gta gca gtg tca gat tca gag agc gtt tcc ttg tca ggt tcc      1534
Glu Lys Val Ala Val Ser Asp Ser Glu Ser Val Ser Leu Ser Gly Ser


ccc aaa tcc agc ccc acc tct gcc agt gcc tgt ggg act caa ggg ctc      1582
Pro Lys Ser Ser Pro Thr Ser Ala Ser Ala Cys Gly Thr Gln Gly Leu


aga cag cca ggg tcc aaa tat cca gat att gcc tcg ccc aca ttt cga      1630
Arg Gln Pro Gly Ser Lys Tyr Pro Asp Ile Ala Ser Pro Thr Phe Arg


agg ttg ttc ggt gcc aag gca ggc ggc aaa tct gcc tcc gca cct aat      1678
Arg Leu Phe Gly Ala Lys Ala Gly Gly Lys Ser Ala Ser Ala Pro Asn


act gag ggg gcg aag tcc tcc tca gta gtg ctc agc cct agt acc tct      1726
Thr Glu Gly Ala Lys Ser Ser Ser Val Val Leu Ser Pro Ser Thr Ser


tta gcc cga caa ggc agt ctg gag tca ccg tcg tcc ggt acg gga agc      1774
Leu Ala Arg Gln Gly Ser Leu Glu Ser Pro Ser Ser Gly Thr Gly Ser


atg ggc agt gct ggt ggg ctg agt ggc agc agc agc cct ctc ttc aat      1822
Met Gly Ser Ala Gly Gly Leu Ser Gly Ser Ser Ser Pro Leu Phe Asn


aaa ccc tca gac cta act aca gat gtt ata agc tta agt cac tcc ttg      1870
Lys Pro Ser Asp Leu Thr Thr Asp Val Ile Ser Leu Ser His Ser Leu


gct tcc agc cca gcg tcg gtt cac tct ttc aca tcc ggt ggg ctt gtg      1918
Ala Ser Ser Pro Ala Ser Val His Ser Phe Thr Ser Gly Gly Leu Val


tgg gct gcc aat ctg agc agt tcc tct gcc ggc agc aag gac act cca      1966
Trp Ala Ala Asn Leu Ser Ser Ser Ser Ala Gly Ser Lys Asp Thr Pro


agt tac cag tcc atg act agt ctc cat acg agc tct gag tcc att gac      2014
Ser Tyr Gln Ser Met Thr Ser Leu His Thr Ser Ser Glu Ser Ile Asp
```

46

```
ctg ccc ctc agc cat cat ggc tcc ctg tct gga ctg acc aca ggc act        2062
Leu Pro Leu Ser His His Gly Ser Leu Ser Gly Leu Thr Thr Gly Thr


cac gag gtg cag agc ctg ctc atg aga acg ggt agt gtg aga tct act        2110
His Glu Val Gln Ser Leu Leu Met Arg Thr Gly Ser Val Arg Ser Thr


ctc tca gaa aga tac acc cca tca tct cgg cag gcc aac caa gaa gaa        2158
Leu Ser Glu Arg Tyr Thr Pro Ser Ser Arg Gln Ala Asn Gln Glu Glu


ggc aaa gag tgg ctg cga tcg cat tcc act ggc ggg ctg cag gat act        2206
Gly Lys Glu Trp Leu Arg Ser His Ser Thr Gly Gly Leu Gln Asp Thr


ggc aac cag tct ccc ttg gtc tcc cct tct gcc atg tca tcg tca gcc        2254
Gly Asn Gln Ser Pro Leu Val Ser Pro Ser Ala Met Ser Ser Ser Ala


acc gga aaa tat cac ttt tcc aac ttg gtg agt ccc acc aac ctc tcc        2302
Thr Gly Lys Tyr His Phe Ser Asn Leu Val Ser Pro Thr Asn Leu Ser


cag ttt aac ctg cct gca ccc agt atg atg cgc tcc agc agt atc ccc        2350
Gln Phe Asn Leu Pro Ala Pro Ser Met Met Arg Ser Ser Ser Ile Pro


gcc cag gac tcc tcc ttc gac ctc tat gat gat gcc cag ctt tgc ggt        2398
Ala Gln Asp Ser Ser Phe Asp Leu Tyr Asp Asp Ala Gln Leu Cys Gly


agt gca act tcc ctg gag gaa agg cca cgg gcc gtt agc cac tcc ggc        2446
Ser Ala Thr Ser Leu Glu Glu Arg Pro Arg Ala Val Ser His Ser Gly


tca ttc aga gac agc atg gag gaa gtt cat ggc tct tca ctg tca ttg        2494
Ser Phe Arg Asp Ser Met Glu Glu Val His Gly Ser Ser Leu Ser Leu


gtc tcc agc aca tca tcc ctt tac tct acg gct gaa gag aag gct cat        2542
Val Ser Ser Thr Ser Ser Leu Tyr Ser Thr Ala Glu Glu Lys Ala His


tca gag caa atc cat aag cta cgg aga gaa ctg gtt gcc tcc cag gag        2590
Ser Glu Gln Ile His Lys Leu Arg Arg Glu Leu Val Ala Ser Gln Glu


aaa gtc gct acc ctc acg tct cag ctg tca gca aat gct cac ctt gta        2638
Lys Val Ala Thr Leu Thr Ser Gln Leu Ser Ala Asn Ala His Leu Val


gca gct ttt gaa aag agt tta ggg aat atg act ggc cgt ttg caa agt        2686
Ala Ala Phe Glu Lys Ser Leu Gly Asn Met Thr Gly Arg Leu Gln Ser


cta acc atg aca gcg gaa caa aag gaa tct gag ctt atc gaa ctg cgg        2734
```

47

Leu Thr Met Thr Ala Glu Gln Lys Glu Ser Glu Leu Ile Glu Leu Arg

gaa acc att gaa atg ttg aag gcc cag aac tct gct gcc caa gca gcc   2782
Glu Thr Ile Glu Met Leu Lys Ala Gln Asn Ser Ala Ala Gln Ala Ala

att cag gga gca ctg aat ggc cca gac cac cct ccc aaa gat ctc cgc   2830
Ile Gln Gly Ala Leu Asn Gly Pro Asp His Pro Pro Lys Asp Leu Arg

atc aga aga cag cac tcc tct gaa agt gtt tct agt atc aac agc gca   2878
Ile Arg Arg Gln His Ser Ser Glu Ser Val Ser Ser Ile Asn Ser Ala

acg agc cat tcc agc att ggc agt ggt aat gat gct gac tcc aag aaa   2926
Thr Ser His Ser Ser Ile Gly Ser Gly Asn Asp Ala Asp Ser Lys Lys

<210> 20
<211> 975
<212> PRT
<213> Mouse

<400> 20

Ser His Ser Thr Leu Glu Thr Thr Phe Asp Thr Thr Val Thr Thr Glu
 1   5   10   15

Val Asn Gly Arg Ala Ile Pro Asn Leu Thr Ser Arg Pro Ser Pro Met
              20   25   30

Thr Trp Arg Leu Gly Gln Ala Cys Pro Arg Leu Gln Ala Gly Asp Ala
          35   40   45

Pro Ser Met Gly Ala Gly Tyr Ser Arg Ser Gly Thr Ser Arg Phe Ile
    50   55   60

His Thr Asp Pro Ser Arg Phe Met Tyr Thr Thr Pro Leu Arg Arg Ala
65   70   75   80

Ala Val Ser Arg Leu Gly Asn Met Ser Gln Ile Asp Met Ser Glu Lys
              85   90   95

Ala Ser Ser Asp Leu Asp Val Ser Ser Glu Val Asp Val Gly Gly Tyr
              100   105   110

Met Ser Asp Gly Asp Ile Leu Gly Lys Ser Leu Arg Ala Asp Asp Ile
              115   120   125

Asn Ser Gly Tyr Met Thr Asp Gly Gly Leu Asn Leu Tyr Thr Arg Ser
              130   135   140

Leu Asn Arg Val Pro Asp Thr Ala Thr Ser Arg Asp Val Ile Gln Arg
145   150   155   160

48

Gly Val His Asp Val Thr Val Asp Ala Asp Ser Trp Asp Asp Ser Ser
                165   170   175

Ser Val Ser Ser Gly Leu Ser Asp Thr Leu Asp Asn Ile Ser Thr Asp
                180   185   190

Asp Leu Asn Thr Thr Ser Ser Ile Ser Ser Tyr Ser Asn Ile Thr Val
                195   200   205

Pro Ser Arg Lys Asn Thr Gln Leu Lys Thr Asp Ala Glu Lys Arg Ser
210   215   220

Thr Thr Asp Glu Thr Trp Asp Ser Pro Glu Glu Leu Lys Lys Ala Glu
225   230   235   240

Gly Asp Cys Asp Ser His Gly Asp Gly Ala Ala Lys Trp Lys Gly Ala
                245   250   255

Thr Ser Gly Leu Ala Glu Asp Ser Glu Lys Thr Gly Gln Lys Ala Ser
                260   265   270

Leu Ser Val Ser Gln Thr Gly Ser Trp Arg Arg Gly Met Ser Ala Gln
                275   280   285

Gly Gly Thr Pro Ala Thr Ala Arg Gln Lys Thr Ser Thr Ser Ala Leu
                290   295   300

Lys Thr Pro Gly Lys Thr Asp Asp Ala Lys Ala Ser Glu Lys Gly Lys
305   310   315   320

Thr Pro Leu Lys Gly Ser Ser Leu Gln Arg Ser Pro Ser Asp Ala Gly
                325   330   335

Lys Ser Ser Gly Asp Glu Gly Lys Lys Pro Pro Ser Gly Ile Gly Arg
                340   345   350

Ser Thr Ala Ser Ser Ser Phe Gly Tyr Lys Lys Pro Ser Gly Val Gly
                355   360   365

Ala Ser Thr Met Ile Thr Ser Ser Gly Ala Thr Ile Thr Ser Gly Ser
                370   375   380

Ala Thr Leu Gly Lys Ile Pro Lys Ser Ala Ala Ile Gly Gly Lys Ser
385   390   395   400

Asn Ala Gly Arg Lys Thr Ser Leu Asp Gly Ser Gln Asn Gln Asp Asp
                405   410   415

Val Val Leu His Val Ser Ser Lys Thr Thr Leu Gln Tyr Arg Ser Leu
                420   425   430

Pro Arg Pro Ser Lys Ser Ser Thr Ser Gly Ile Pro Gly Arg Gly Gly
                435   440   445

His Arg Ser Ser Thr Ser Ser Ile Asp Ser Asn Val Ser Ser Lys Ser

49

```
           450                 455                 460

Ala Gly Ala Thr Thr Ser Lys Leu Arg Glu Pro Thr Lys Ile Gly Ser
465             470                 475                     480

Gly Arg Ser Ser Pro Val Thr Val Asn Gln Thr Asp Lys Glu Lys Glu
                485                 490                 495

Lys Val Ala Val Ser Asp Ser Glu Ser Val Ser Leu Ser Gly Ser Pro
            500                 505                 510

Lys Ser Ser Pro Thr Ser Ala Ser Ala Cys Gly Thr Gln Gly Leu Arg
            515                 520                 525

Gln Pro Gly Ser Lys Tyr Pro Asp Ile Ala Ser Pro Thr Phe Arg Arg
        530                 535                 540

Leu Phe Gly Ala Lys Ala Gly Gly Lys Ser Ala Ser Ala Pro Asn Thr
545             550                 555                     560

Glu Gly Ala Lys Ser Ser Ser Val Val Leu Ser Pro Ser Thr Ser Leu
                565                 570                 575

Ala Arg Gln Gly Ser Leu Glu Ser Pro Ser Ser Gly Thr Gly Ser Met
            580                 585                 590

Gly Ser Ala Gly Gly Leu Ser Gly Ser Ser Ser Pro Leu Phe Asn Lys
            595                 600                 605

Pro Ser Asp Leu Thr Thr Asp Val Ile Ser Leu Ser His Ser Leu Ala
    610                 615                 620

Ser Ser Pro Ala Ser Val His Ser Phe Thr Ser Gly Gly Leu Val Trp
625             630                 635                     640

Ala Ala Asn Leu Ser Ser Ser Ser Ala Gly Ser Lys Asp Thr Pro Ser
            645                 650                 655

Tyr Gln Ser Met Thr Ser Leu His Thr Ser Ser Glu Ser Ile Asp Leu
            660                 665                 670

Pro Leu Ser His His Gly Ser Leu Ser Gly Leu Thr Thr Gly Thr His
        675                 680                 685

Glu Val Gln Ser Leu Leu Met Arg Thr Gly Ser Val Arg Ser Thr Leu
    690                 695                 700

Ser Glu Arg Tyr Thr Pro Ser Ser Arg Gln Ala Asn Gln Glu Glu Gly
705             710                 715                     720

Lys Glu Trp Leu Arg Ser His Ser Thr Gly Gly Leu Gln Asp Thr Gly
                725                 730                 735

Asn Gln Ser Pro Leu Val Ser Pro Ser Ala Met Ser Ser Ser Ala Thr
            740                 745                 750
```

50

```
Gly Lys Tyr His Phe Ser Asn Leu Val Ser Pro Thr Asn Leu Ser Gln
    755             760             765

Phe Asn Leu Pro Ala Pro Ser Met Met Arg Ser Ser Ser Ile Pro Ala
    770             775             780

Gln Asp Ser Ser Phe Asp Leu Tyr Asp Asp Ala Gln Leu Cys Gly Ser
785             790             795             800

Ala Thr Ser Leu Glu Glu Arg Pro Arg Ala Val Ser His Ser Gly Ser
            805             810             815

Phe Arg Asp Ser Met Glu Glu Val His Gly Ser Ser Leu Ser Leu Val
            820             825             830

Ser Ser Thr Ser Ser Leu Tyr Ser Thr Ala Glu Glu Lys Ala His Ser
    835             840             845

Glu Gln Ile His Lys Leu Arg Arg Glu Leu Val Ala Ser Gln Glu Lys
    850             855             860

Val Ala Thr Leu Thr Ser Gln Leu Ser Ala Asn Ala His Leu Val Ala
865             870             875             880

Ala Phe Glu Lys Ser Leu Gly Asn Met Thr Gly Arg Leu Gln Ser Leu
            885             890             895

Thr Met Thr Ala Glu Gln Lys Glu Ser Glu Leu Ile Glu Leu Arg Glu
            900             905             910

Thr Ile Glu Met Leu Lys Ala Gln Asn Ser Ala Ala Gln Ala Ala Ile
    915             920             925

Gln Gly Ala Leu Asn Gly Pro Asp His Pro Pro Lys Asp Leu Arg Ile
    930             935             940

Arg Arg Gln His Ser Ser Glu Ser Val Ser Ser Ile Asn Ser Ala Thr
945             950             955             960

Ser His Ser Ser Ile Gly Ser Gly Asn Asp Ala Asp Ser Lys Lys
            965             970             975
```

<210> 21
<211> 2583
<212> DNA
<213> mouse

<400> 21

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gggatgaagg gaaaaagcca ccgtcaggca ttggaagatc gacagccagc agttcttttg      60

gatacaagaa gccaagtggt gtagggcttt ccactatgat taccagcagc ggtgccacca     120

tcacaagcgg ttcagctaca ctggggaaaa tccccaaatc cgctgccatt ggtgggaagt     180
```

51

```
ccaatgcagg aaggaaaacc agcctggacg ggtcccagaa tcaagatgat gttgtcctgc       240

acgtgagctc gaagaccacc ctccagtacc gtagtttgcc ccgcccttct aagtccagca       300

ccagcggaat ccctgggaga ggtggccaca ggtcgagcac cagcagcatt gattccaatg       360

tcagcagcaa gtcagctggg gccaccacct ccaaactgag agaaccgact aagatcggct       420

cagggcgctc gagtccagtc actgtcaacc aaacagacaa agagaaggag aaagtagcag       480

tgtcagattc agagagcgtt tccttgtcag gttcccccaa atccagcccc acctctgcca       540

gtgcctgtgg gactcaaggg ctcagacagc cagggtccaa atatccagat attgcctcgc       600

ccacatttcg aaggtaaggg tatgtaaaga gatgttggga aaacataaaa ggtagtatat       660

agcatgtatt tattctgtac gaaactattt tcatgtattc taaatattct aagattctgt       720

atcttatact tgtctaaaat atagtgattt tattttgctg attgcacctg ttgctagtgt       780

aaaagcattg ctcatttaga gagtggttag cctttcagct atacagccag tgtgacacta       840

aaatacagat accacttgta gcgggcataa aaccacatga ctgactattc atagaaataa       900

agtgatagct tgtaaagata tttagtgatt tccacctctc ctttccagaa ttaaaaaaag       960

caaattgcat agatctttat aaacacattt acttctagtg tatgttatct tgttgactct      1020

taatgaaatg gcagttatga atatagatga tatattcttt ctaacagttt ataagagacc      1080

aatttataca gtaccagatc ttaacatagt aacaataaca gcaacaaaaa caacccaaaa      1140

agctatcaaa gtatggtctg attgcagaat ttgaaaacat ttacatgttt gacataggac      1200

aagaactcag gagtgaggtg acttttttata agtcttcatc aatgtccttt tacaggaacc      1260

aggaagcata tctgatatat gtgtcaggat tatcacttta ttaattatgt gaaattctgt      1320

ttagaaatct acctgatttt aaatacttta atatagtagg ggtcaaaatt agttaatgag      1380

ttaagacaag ttgttaaata atcctggctc tgttttctca tcttcaaaat gatagagtat      1440

aatttatcac ctcttgttaa atatttcagg tttgtgttta ttctcttgat aactttgatc      1500

tcttagaaga gtcttgaaga atttacatta agtaatctta gaaacataac tatttgagaa      1560

acagtagtca aattttgtca ttagaagtat taactctgaa gaatgatttg aagtgacagt      1620

tcttagaaag aataaattat agcttgtagc aagagtaaat attttcactg cttgtgtgag      1680

agccaagagc gccctcttgt ggcccattac ctatgaaaca atttctcata ttcgccctag      1740

aaatcttcca ctgcaggaaa taatggattt cattgcctct gaattagtaa ccattctgcc      1800

atttcttcat accattttat ttccatactt gcataaattt gattatgtca tctgcttcat      1860

ttacaaaact aaaatgtttt ctgagctaaa ctccagtagc taacttagta caaatggtat      1920
```

52

```
ttttaaatca ctgctataag tatatatatt tgaatagctc tggcaacgga cggaaatccc     1980

tatggtcttt ccatgggaag atacaaacca atccataagt tgtccagcaa tatccaatat     2040

ttccagccca gccagtcagg cctcttaaac attaccttac atatttgaac ctttccttaa     2100

atgtcccctt tagacaatct attttttaaa aagatgaaaa tccatttaag catcatatat     2160

cgaatgcgta gaagttgttt cattataatg gttctgcaga taggtaatgc caaaacggcc     2220

aaaatatttg atcactagaa gcgtaaaagt caagtacaat catgttgact ttttttccaa     2280

ggtgggttca ctgctgccca ccttggttcc aggccagtgc ttacttaaga tatcgtaagt     2340

gatttttttt taatttttaa tttttagta gttggttaat caaaagccag tcatgtcacc      2400

ttcaggaaca tagaggctgg acgtgcttgg cagctcacga ctccaaagca cacttggctc     2460

tgtggactga aaccctagga aacgtggatg tgagtctctt ggaacaactc aagttgttat     2520

ttgttttct tttaggttgt tcggtgccaa ggcaggcggc aaatctgcct ccgcacctaa       2580

tac                                                                   2583
```

```
<210> 22
<211> 37
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (2)..(34)

<400> 22
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```
c cgc ggg gct tcc atc ctt cct ttg act gat ttt taa                    37
  Arg Gly Ala Ser Ile Leu Pro Leu Thr Asp Phe  *
```

```
<210> 23
<211> 6768
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (1)..(5928)

<400> 23
```

```
att tta att tgt att ttc ccc gcc gcc ccg ccc ctt ttc ctc cga ccc      48
```

53

Ile Leu Ile Cys Ile Phe Pro Ala Ala Pro Pro Leu Phe Leu Arg Pro

cgc cct atc gct ccc cgg ctt ccc tgc tct ttc ctt ttt ccc ggc ttc   96
Arg Pro Ile Ala Pro Arg Leu Pro Cys Ser Phe Leu Phe Pro Gly Phe

ctt cct cgc gtt tct ttc ccc tgc gcc ctc ggc ttg cct ctc tcc ctc 144
Leu Pro Arg Val Ser Phe Pro Cys Ala Leu Gly Leu Pro Leu Ser Leu

ctc cct cgc tct ctc ccc ctt ctc tcc cct tct tcc tcg gtt tct tcc 192
Leu Pro Arg Ser Leu Pro Leu Leu Ser Pro Ser Ser Ser Val Ser Ser

gtc ctc tct ctc ccc ctc ctc ctc ccc cgc ctc ctc ctc ctg cgc tcc 240
Val Leu Ser Leu Pro Leu Leu Leu Pro Arg Leu Leu Leu Leu Arg Ser

cgc ccc ctg ccc cct ccc ccc gtg cct gca gac gcg cgg atc gtc cat 288
Arg Pro Leu Pro Pro Pro Pro Val Pro Ala Asp Ala Arg Ile Val His

gcg ctc ctc gcg ggc aga atg ctg ggc agc agc gtc aag agc gtg cag 336
Ala Leu Leu Ala Gly Arg Met Leu Gly Ser Ser Val Lys Ser Val Gln

ccc gag gtg gag ctg agc agc ggc ggc ggc gac gag ggc gcg gac gaa 384
Pro Glu Val Glu Leu Ser Ser Gly Gly Gly Asp Glu Gly Ala Asp Glu

ccg cgg ggc gcc ggc agg aag gcg gca gcg gcg gac ggc aga ggc atg 432
Pro Arg Gly Ala Gly Arg Lys Ala Ala Ala Ala Asp Gly Arg Gly Met

ctg ccc aag cgc gcc aag gcg ccc ggc ggc ggc ggc ggc atg gcc aag 480
Leu Pro Lys Arg Ala Lys Ala Pro Gly Gly Gly Gly Gly Met Ala Lys

gcc agc gcg gct gag ctg aag gtc ttc aag tcc ggc agc gtg gac agc 528
Ala Ser Ala Ala Glu Leu Lys Val Phe Lys Ser Gly Ser Val Asp Ser

cgt gtc ccc ggc ggg ccg ccc gcc tcc aac ctg cgc aag cag aag tca 576
Arg Val Pro Gly Gly Pro Pro Ala Ser Asn Leu Arg Lys Gln Lys Ser

ctc acc aac ctc tct ttt ctc acg gac tcc gag aaa aag ctg cag ctt 624
Leu Thr Asn Leu Ser Phe Leu Thr Asp Ser Glu Lys Lys Leu Gln Leu

tat gag ccc gaa tgg agc gac gat atg gcc aag gcg ccc aaa ggc tta 672
Tyr Glu Pro Glu Trp Ser Asp Asp Met Ala Lys Ala Pro Lys Gly Leu

ggc aag gtg ggg tcc aag ggc cgt gaa gct ccg ctg atg tcc aag acg 720
Gly Lys Val Gly Ser Lys Gly Arg Glu Ala Pro Leu Met Ser Lys Thr

54

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ctg tcc aag tcg gag cac tcg ctc ttc cag gcc aag ggc agc ccg gcg        768
Leu Ser Lys Ser Glu His Ser Leu Phe Gln Ala Lys Gly Ser Pro Ala


ggc ggc gcc aag acc ccc ctg gct ccg ctc gcg ccc aac ctg gga aag        816
Gly Gly Ala Lys Thr Pro Leu Ala Pro Leu Ala Pro Asn Leu Gly Lys


ccg agc cgg atc cct cga gga ccc tat gcg gag gtc aag ccg ctc agc        864
Pro Ser Arg Ile Pro Arg Gly Pro Tyr Ala Glu Val Lys Pro Leu Ser


aag gcg cct gaa gcg gcc gtg agc gaa gat ggc aaa tcg gac gac gag        912
Lys Ala Pro Glu Ala Ala Val Ser Glu Asp Gly Lys Ser Asp Asp Glu


ctg ctc tcc agc aag gcc aag gcg caa aag agc tct ggg cct gtc ccc        960
Leu Leu Ser Ser Lys Ala Lys Ala Gln Lys Ser Ser Gly Pro Val Pro


tct gcc aag ggc cag gag gag cgc gcc ttc ctc aag gtg gac ccc gag       1008
Ser Ala Lys Gly Gln Glu Glu Arg Ala Phe Leu Lys Val Asp Pro Glu


ctg gtg gtg acc gtg ctg gga gac ctg gag cag ctg ctc ttc agc cag       1056
Leu Val Val Thr Val Leu Gly Asp Leu Glu Gln Leu Leu Phe Ser Gln


atg ctg gac cca gag tcc cag aga aag agg aca gtg cag aat gtc ctg       1104
Met Leu Asp Pro Glu Ser Gln Arg Lys Arg Thr Val Gln Asn Val Leu


gat ctc cgg cag aac ctg gaa gag acc atg tcc agc ctg cga ggg tcc       1152
Asp Leu Arg Gln Asn Leu Glu Glu Thr Met Ser Ser Leu Arg Gly Ser


cag gtg act cac agc tcc ctg gag atg acc tgc tac gac agc gat gat       1200
Gln Val Thr His Ser Ser Leu Glu Met Thr Cys Tyr Asp Ser Asp Asp


gcc aac cca cgc agc gtg tcc agc ctc tcc aac cgc tcg tac cct ctg       1248
Ala Asn Pro Arg Ser Val Ser Ser Leu Ser Asn Arg Ser Tyr Pro Leu


tca tgg cgc tat ggc cag tcc agt ccg cgg ctg cag gct ggt gac gcg       1296
Ser Trp Arg Tyr Gly Gln Ser Ser Pro Arg Leu Gln Ala Gly Asp Ala


ccc tct gtg ggt ggg agc tgc cgc tcg gag ggg acg ccc gcc tgg tac       1344
Pro Ser Val Gly Gly Ser Cys Arg Ser Glu Gly Thr Pro Ala Trp Tyr


atg cac ggc gaa cgg gcc cac tac tcc cac acc atg ccc atg cgc agc       1392
Met His Gly Glu Arg Ala His Tyr Ser His Thr Met Pro Met Arg Ser
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55

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ccc agc aag ctc agc cat atc tcc cgc ctg gag ctg gtc gaa tcc ctg        1440
Pro Ser Lys Leu Ser His Ile Ser Arg Leu Glu Leu Val Glu Ser Leu


gac tcg gat gag gtg gac ctc aag tcc ggc tac atg agc gac agt gac        1488
Asp Ser Asp Glu Val Asp Leu Lys Ser Gly Tyr Met Ser Asp Ser Asp


ctc atg ggc aag acc atg acg gag gat gat gac atc act acc ggc tgg        1536
Leu Met Gly Lys Thr Met Thr Glu Asp Asp Asp Ile Thr Thr Gly Trp


gat gaa agc agc tcc atc agt agt gga ctc agc gat gcc tca gac aat        1584
Asp Glu Ser Ser Ser Ile Ser Ser Gly Leu Ser Asp Ala Ser Asp Asn


ctc agt tca gaa gaa ttc aat gcc agc tcc tca ctc aac tcc ctc cca        1632
Leu Ser Ser Glu Glu Phe Asn Ala Ser Ser Ser Leu Asn Ser Leu Pro


agt act ccc act gct tct cgc agg aac tca aca ata gtg cta cgc aca        1680
Ser Thr Pro Thr Ala Ser Arg Arg Asn Ser Thr Ile Val Leu Arg Thr


gac tca gag aag cgc tca ctg gca gaa agt ggg ctg agc tgg ttt agt        1728
Asp Ser Glu Lys Arg Ser Leu Ala Glu Ser Gly Leu Ser Trp Phe Ser


gaa tca gag gag aaa gcc cct aaa aaa ctg gag tac gac agt ggt agc        1776
Glu Ser Glu Glu Lys Ala Pro Lys Lys Leu Glu Tyr Asp Ser Gly Ser


ctg aag atg gaa cct ggg act tct aag tgg cgg agg gag cgg cct gag        1824
Leu Lys Met Glu Pro Gly Thr Ser Lys Trp Arg Arg Glu Arg Pro Glu


agc tgt gat gat tca tcc aag ggt gga gaa ctg aaa aag ccc atc agc        1872
Ser Cys Asp Asp Ser Ser Lys Gly Gly Glu Leu Lys Lys Pro Ile Ser


ctg ggc cac cct ggt tcc ctg aag aag ggc aag acc cca cct gtg gct        1920
Leu Gly His Pro Gly Ser Leu Lys Lys Gly Lys Thr Pro Pro Val Ala


gta act tcc ccc atc act cac aca gcc cag agt gcc ctc aaa gtc gca        1968
Val Thr Ser Pro Ile Thr His Thr Ala Gln Ser Ala Leu Lys Val Ala


ggc aaa cct gag ggc aaa gct aca gac aag ggt aag ctt gca gtg aag        2016
Gly Lys Pro Glu Gly Lys Ala Thr Asp Lys Gly Lys Leu Ala Val Lys


aat act ggg ctc caa cgc tcc tcc tct gat gct ggt cgg gac cgc ctg        2064
Asn Thr Gly Leu Gln Arg Ser Ser Ser Asp Ala Gly Arg Asp Arg Leu
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agt gat gct aag aag ccc ccc tcg ggc att gct cgc ccc tcc act tcg          2112
Ser Asp Ala Lys Lys Pro Pro Ser Gly Ile Ala Arg Pro Ser Thr Ser


gga tcc ttt ggc tac aag aag cct cct cct gcc aca ggc aca gcc act          2160
Gly Ser Phe Gly Tyr Lys Lys Pro Pro Pro Ala Thr Gly Thr Ala Thr


gtc atg caa act ggt ggt tca gcc act ctc agc aag atc cag aag tcc          2208
Val Met Gln Thr Gly Gly Ser Ala Thr Leu Ser Lys Ile Gln Lys Ser


tca ggc atc cct gtc aag cca gta aat ggg cgc aag act agc tta gat          2256
Ser Gly Ile Pro Val Lys Pro Val Asn Gly Arg Lys Thr Ser Leu Asp


gtt tcc aac agt gca gag cca gga ttc ctg gct cct gga gcc cgt tct          2304
Val Ser Asn Ser Ala Glu Pro Gly Phe Leu Ala Pro Gly Ala Arg Ser


aac atc cag tac cgc agc ctg ccc cgg cca gcc aag tca agt tct atg          2352
Asn Ile Gln Tyr Arg Ser Leu Pro Arg Pro Ala Lys Ser Ser Ser Met


agc gtg acc ggc ggg cgg ggt gga cct cgc cct gtg agc agc agc att          2400
Ser Val Thr Gly Gly Arg Gly Gly Pro Arg Pro Val Ser Ser Ser Ile


gac ccc agt ctc ctc agc acc aag cag gga ggc ctt acg cct tcc aga          2448
Asp Pro Ser Leu Leu Ser Thr Lys Gln Gly Gly Leu Thr Pro Ser Arg


ctg aag gag cct acc aag gta gcc agt ggg cgg acc act cca gcc cct          2496
Leu Lys Glu Pro Thr Lys Val Ala Ser Gly Arg Thr Thr Pro Ala Pro


gtc aat cag aca gat cgg gaa aag gag aag gcc aaa gcc aag gca gtg          2544
Val Asn Gln Thr Asp Arg Glu Lys Glu Lys Ala Lys Ala Lys Ala Val


gcc ttg gac tca gac aac atc tcc ttg aag agt att ggc tcc cca gaa          2592
Ala Leu Asp Ser Asp Asn Ile Ser Leu Lys Ser Ile Gly Ser Pro Glu


agt act ccc aag aac caa gca agc cac ccc aca gcc acc aag ctg gca          2640
Ser Thr Pro Lys Asn Gln Ala Ser His Pro Thr Ala Thr Lys Leu Ala


gag ctg cca cca acc cct ctc agg gcc aca gcg aag agc ttt gtc aaa          2688
Glu Leu Pro Pro Thr Pro Leu Arg Ala Thr Ala Lys Ser Phe Val Lys


cca ccc tca cta gcc aat ctt gac aag gtc aac tcc aac agt ctg gat          2736
Pro Pro Ser Leu Ala Asn Leu Asp Lys Val Asn Ser Asn Ser Leu Asp


cta cca tca tcc agt gat acc acc cat gct tca aag gtc cca gat ctg          2784
Leu Pro Ser Ser Ser Asp Thr Thr His Ala Ser Lys Val Pro Asp Leu
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57

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cat gct aca agc tca gca tct ggg ggc cct ctc cct tcc tgc ttc acc      2832
His Ala Thr Ser Ser Ala Ser Gly Gly Pro Leu Pro Ser Cys Phe Thr

ccc agt ccg gca ccc atc ctc aat att aac tca gcc agc ttc tcc cag      2880
Pro Ser Pro Ala Pro Ile Leu Asn Ile Asn Ser Ala Ser Phe Ser Gln

ggc ctg gag cta atg agt ggt ttc agt gtg cca aaa gag acc cgc atg      2928
Gly Leu Glu Leu Met Ser Gly Phe Ser Val Pro Lys Glu Thr Arg Met

tac ccc aaa ctc tca ggc ctg cac agg agc atg gag tcc ctc cag atg      2976
Tyr Pro Lys Leu Ser Gly Leu His Arg Ser Met Glu Ser Leu Gln Met

cca atg agc ctc ccc agt gcc ttc ccc agc agt act ccc gtc ccc acc      3024
Pro Met Ser Leu Pro Ser Ala Phe Pro Ser Ser Thr Pro Val Pro Thr

cca cct gct ccc cct gct gct ccc aca gaa gaa gag acg gaa gag ctg      3072
Pro Pro Ala Pro Pro Ala Ala Pro Thr Glu Glu Glu Thr Glu Glu Leu

act tgg agt gga agc ccc aga gct ggg caa ctg gac agt aat cag cgg      3120
Thr Trp Ser Gly Ser Pro Arg Ala Gly Gln Leu Asp Ser Asn Gln Arg

gat cgg aac act ctt ccc aag aaa ggg ctc agg tac cag ctt cag tcc      3168
Asp Arg Asn Thr Leu Pro Lys Lys Gly Leu Arg Tyr Gln Leu Gln Ser

cag gag gag acc aag gag agg cga cat tcc cat acc att ggt ggg ctg      3216
Gln Glu Glu Thr Lys Glu Arg Arg His Ser His Thr Ile Gly Gly Leu

cct gaa tcc gat gac cag tca gag ctg cct tct ccc cct gca ctt ccc      3264
Pro Glu Ser Asp Asp Gln Ser Glu Leu Pro Ser Pro Pro Ala Leu Pro

atg tct ctg agt gca aag ggc caa ctt acc aac ata gtg agt ccc act      3312
Met Ser Leu Ser Ala Lys Gly Gln Leu Thr Asn Ile Val Ser Pro Thr

gcg gcc acc acg cca aga atc acc cgc tcc aac agc atc ccc acc cac      3360
Ala Ala Thr Thr Pro Arg Ile Thr Arg Ser Asn Ser Ile Pro Thr His

gag gcg gcc ttc gag ctg tac agc ggc tcc caa atg ggg agc acc ctg      3408
Glu Ala Ala Phe Glu Leu Tyr Ser Gly Ser Gln Met Gly Ser Thr Leu

tcc ctg gcc gag aga ccc aag gga atg att cgg tca gga tcc ttc cga      3456
Ser Leu Ala Glu Arg Pro Lys Gly Met Ile Arg Ser Gly Ser Phe Arg

gac ccc acg gac gat gtt cac ggc tca gtg ctg tcc ctg gcc tcc agt      3504
Asp Pro Thr Asp Asp Val His Gly Ser Val Leu Ser Leu Ala Ser Ser

gcc tcc tcc acc tac tcc tca gct gag gag agg atg caa tct gag caa      3552
Ala Ser Ser Thr Tyr Ser Ser Ala Glu Glu Arg Met Gln Ser Glu Gln

atc cgg aag ctt cgt agg gaa ctg gaa tca tcc cag gaa aaa gtg gcc      3600
Ile Arg Lys Leu Arg Arg Glu Leu Glu Ser Ser Gln Glu Lys Val Ala

acc ttg acg tct cag ctt tct gcc aat gct aat ctg gtg gct gct ttt      3648
Thr Leu Thr Ser Gln Leu Ser Ala Asn Ala Asn Leu Val Ala Ala Phe

gag cag agc ctg gtg aat atg aca tcc cgc ctg cga cac ctg gca gag      3696
Glu Gln Ser Leu Val Asn Met Thr Ser Arg Leu Arg His Leu Ala Glu
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58

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acg gcc gag gag aag gac act gag ctg ctg gat ttg cga gaa acc ata     3744
Thr Ala Glu Glu Lys Asp Thr Glu Leu Leu Asp Leu Arg Glu Thr Ile


gac ttt ctg aag aaa aag aac tct gag gcc cag gca gtc att cag gga     3792
Asp Phe Leu Lys Lys Lys Asn Ser Glu Ala Gln Ala Val Ile Gln Gly


gcc ctt aat gcc tca gaa acc aca ccc aaa gaa ctt cgg atc aag aga     3840
Ala Leu Asn Ala Ser Glu Thr Thr Pro Lys Glu Leu Arg Ile Lys Arg


caa aac tcc tca gat agc atc tca agc ctc aac agc atc act agc cat     3888
Gln Asn Ser Ser Asp Ser Ile Ser Ser Leu Asn Ser Ile Thr Ser His


tcc agc atc ggc agc agc aag gat gct gat gcg aaa aag aag aaa aaa     3936
Ser Ser Ile Gly Ser Ser Lys Asp Ala Asp Ala Lys Lys Lys Lys Lys


aag agt tgg ctt cga agt tcc ttc aac aaa gcg ttc agt ata aaa aag     3984
Lys Ser Trp Leu Arg Ser Ser Phe Asn Lys Ala Phe Ser Ile Lys Lys


ggg ccc aag tca gct tcc tca tac tcg gat ata gag gag att gct aca     4032
Gly Pro Lys Ser Ala Ser Ser Tyr Ser Asp Ile Glu Glu Ile Ala Thr


ccc gac tct tca gcc ccc tca tcc ccc aaa cta cag cat ggt tct aca     4080
Pro Asp Ser Ser Ala Pro Ser Ser Pro Lys Leu Gln His Gly Ser Thr


gag act gct tca ccc tcc atc aag tcc tcc acc tcg tcc tcc gtg ggc     4128
Glu Thr Ala Ser Pro Ser Ile Lys Ser Ser Thr Ser Ser Ser Val Gly


act gat gtc acc gag ggc cct gct cac cca gcc ccc cac act agg ctg     4176
Thr Asp Val Thr Glu Gly Pro Ala His Pro Ala Pro His Thr Arg Leu


ttc cat gca aat gag gag gag gag cca gag aag aag gag gta tcg gag     4224
Phe His Ala Asn Glu Glu Glu Glu Pro Glu Lys Lys Glu Val Ser Glu


ctg cgc tct gag cta tgg gag aag gaa atg aag ctt aca gac atc cgc     4272
Leu Arg Ser Glu Leu Trp Glu Lys Glu Met Lys Leu Thr Asp Ile Arg


ttg gag gcc ctc aac tct gcc cac caa ctg gat cag ctt cgg gag acc     4320
Leu Glu Ala Leu Asn Ser Ala His Gln Leu Asp Gln Leu Arg Glu Thr


atg cac aac atg cag ttg gag gtg gac ctg ctg gaa gca gag aat gac     4368
Met His Asn Met Gln Leu Glu Val Asp Leu Leu Glu Ala Glu Asn Asp


cga ctg aag gta gcc cca ggc ccc tca tca ggc tcc act cca ggg cag     4416
Arg Leu Lys Val Ala Pro Gly Pro Ser Ser Gly Ser Thr Pro Gly Gln


gtc cct gga tca tct gca tta tct tcc cca cgc cgc tcc cta ggc ctg     4464
Val Pro Gly Ser Ser Ala Leu Ser Ser Pro Arg Arg Ser Leu Gly Leu


gca ctc acc cat tcc ttc ggc ccc agt ctt gca gac aca gac ctg tca     4512
Ala Leu Thr His Ser Phe Gly Pro Ser Leu Ala Asp Thr Asp Leu Ser


ccc atg gat ggc atc agt act tgt ggt cca aag gag gaa gtg acc ctc     4560
Pro Met Asp Gly Ile Ser Thr Cys Gly Pro Lys Glu Glu Val Thr Leu


cgg gtg gtg gtg agg atg ccc ccg cag cac atc atc aaa ggg gac ttg     4608
Arg Val Val Val Arg Met Pro Pro Gln His Ile Ile Lys Gly Asp Leu
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59

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aag cag cag gaa ttc ttc ctg ggc tgt agc aag gtc agt gga aaa gtt      4656
Lys Gln Gln Glu Phe Phe Leu Gly Cys Ser Lys Val Ser Gly Lys Val

gac tgg aag atg ctg gat gaa gct gtt ttc caa gtg ttc aag gac tat      4704
Asp Trp Lys Met Leu Asp Glu Ala Val Phe Gln Val Phe Lys Asp Tyr

att tct aaa atg gac cca gcc tct acc ctg gga cta agc act gag tcc      4752
Ile Ser Lys Met Asp Pro Ala Ser Thr Leu Gly Leu Ser Thr Glu Ser

atc cat ggc tac agc atc agc cac gtg aaa cga gtg ttg gat gca gag      4800
Ile His Gly Tyr Ser Ile Ser His Val Lys Arg Val Leu Asp Ala Glu

ccc ccc gag atg cct cct tgc cgt cga ggt gtc aat aac ata tca gtc      4848
Pro Pro Glu Met Pro Pro Cys Arg Arg Gly Val Asn Asn Ile Ser Val

tcc ctc aaa ggt ctg aag gag aaa tgc gtc gac agc ctg gtg ttc gag      4896
Ser Leu Lys Gly Leu Lys Glu Lys Cys Val Asp Ser Leu Val Phe Glu

acg ctg atc ccc aag ccg atg atg cag cac tac ata agc ctc ctg ctg      4944
Thr Leu Ile Pro Lys Pro Met Met Gln His Tyr Ile Ser Leu Leu Leu

aag cac cgg cgc ctc gtc ctc tcg ggc ccc agc ggc acg ggc aag acc      4992
Lys His Arg Arg Leu Val Leu Ser Gly Pro Ser Gly Thr Gly Lys Thr

tac ctg acc aat cgc ttg gcc gag tac ctg gtg gag cgc tct ggc cgt      5040
Tyr Leu Thr Asn Arg Leu Ala Glu Tyr Leu Val Glu Arg Ser Gly Arg

gag gtc aca gag ggc atc gtc agc acc ttc aac atg cac cag cag tct      5088
Glu Val Thr Glu Gly Ile Val Ser Thr Phe Asn Met His Gln Gln Ser

tgc aag gat ctg caa ctg tat ctt tcc aac cta gcc aac cag ata gac      5136
Cys Lys Asp Leu Gln Leu Tyr Leu Ser Asn Leu Ala Asn Gln Ile Asp

cgg gaa aca gga att ggg gat gtg ccc ctg gtg att cta ttg gat gac      5184
Arg Glu Thr Gly Ile Gly Asp Val Pro Leu Val Ile Leu Leu Asp Asp

ctg agt gaa gca ggc tcc atc agt gag ttg gtc aat ggg gcc ctc acc      5232
Leu Ser Glu Ala Gly Ser Ile Ser Glu Leu Val Asn Gly Ala Leu Thr

tgc aag tat cat aaa tgt ccc tat att ata ggt acc acc aat cag cct      5280
Cys Lys Tyr His Lys Cys Pro Tyr Ile Ile Gly Thr Thr Asn Gln Pro

gta aaa atg aca ccc aac cat ggc ttt cac ttg agc ttc agg atg ttg      5328
Val Lys Met Thr Pro Asn His Gly Phe His Leu Ser Phe Arg Met Leu

acc ttc tcc aac aac gtg gag cca gcc aat ggc ttc ctg gtt cgt tac      5376
Thr Phe Ser Asn Asn Val Glu Pro Ala Asn Gly Phe Leu Val Arg Tyr

ctg agg agg aag ctg gta gag tca gac agc gac atc aat gcc aac aag      5424
Leu Arg Arg Lys Leu Val Glu Ser Asp Ser Asp Ile Asn Ala Asn Lys

gaa gag ctg ctt cgg gtg ctc gac tgg gta ccc aag ctg tgg tat cat      5472
Glu Glu Leu Leu Arg Val Leu Asp Trp Val Pro Lys Leu Trp Tyr His

ctc cac acc ttc ctt gag aag cac agc acc tca gac ttc ctc atc ggc      5520
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60

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               Leu His Thr Phe Leu Glu Lys His Ser Thr Ser Asp Phe Leu Ile Gly

               cct tgc ttc ttt ctg tcg tgt ccc att ggc att gag gac ttc cgg acc    5568
               Pro Cys Phe Phe Leu Ser Cys Pro Ile Gly Ile Glu Asp Phe Arg Thr

               tgg ttc att gac ctg tgg aac aac tct atc att ccc tat cta cag gaa    5616
               Trp Phe Ile Asp Leu Trp Asn Asn Ser Ile Ile Pro Tyr Leu Gln Glu

               gga gcc aag gat ggg ata aag gtc cat gga cag aaa gct gct tgg gag    5664
               Gly Ala Lys Asp Gly Ile Lys Val His Gly Gln Lys Ala Ala Trp Glu

               gac cca gtg gaa tgg gtc cgg gac aca ctt ccc tgg cca tca gcc caa    5712
               Asp Pro Val Glu Trp Val Arg Asp Thr Leu Pro Trp Pro Ser Ala Gln

               caa gac caa tca aag ctg tac cac ctg ccc cca ccc acc gtg ggc cct    5760
               Gln Asp Gln Ser Lys Leu Tyr His Leu Pro Pro Pro Thr Val Gly Pro

               cac agc att gcc tca cct ccc gag gat agg aca gtc aaa gac agc acc    5808
               His Ser Ile Ala Ser Pro Pro Glu Asp Arg Thr Val Lys Asp Ser Thr

               cca agt tct ctg gac tca gat cct ctg atg gcc atg ctg ctg aaa ctt    5856
               Pro Ser Ser Leu Asp Ser Asp Pro Leu Met Ala Met Leu Leu Lys Leu


               caa gaa gct gcc aac tac att gag tct cca gat cga gaa acc atc ctg    5904
               Gln Glu Ala Ala Asn Tyr Ile Glu Ser Pro Asp Arg Glu Thr Ile Leu

               gac ccc aac ctt cag gca aca ctt taagggttcg gcaatcactg        5948
               Asp Pro Asn Leu Gln Ala Thr Leu

               tcacccccgg acagcagaac gctggcatca gctatcttag ctcctcctct cccctctcct    6008

               ctttcagagc actggctctc cagccccagg aggagaacag gagggaggag gagatgaaag    6068

               aggagggaca ggttcttggt gctgtacctt tgagaacttc ctaggaagga atggtggggt    6128

               ggcgtttggg aacttgtgcc ccctaaacac atttactggc ctcctctaat gactttgggg    6188

               aaaagatgat tctgggtctt tcccttgact tcttgtttca attacaaact cctgggcttt    6248

               ctggggaggg gttcagaaaa catcaaaaca ctgcagcagt tcctaaatga ttctcacaag    6308

               caaccctgag agagacagtc ttgtgaggga gatctggggg aggcaggaag ctcctcagat    6368

               tttctcacag acccttccca attccatcac cactgccaac aactcctccc ccagagatct    6428

               ggctggagcc cagaaaaaga agcatgtggt ttaaaaaatg tttaaatcaa tctgtaaaag    6488

               gtaaaaatga aaaacaaaaa caagcaaaca aacaaaaac aatggaaaag atgaagctgg    6548

               agagagagga accagttgcc aaggtagaga gctgcccgct cctgccctct ggatgacata    6608

               ggggacatca acaagacggc tgccaacctg agaagtcacc aaaccacaaa aataacctta    6668

               cagccttcag ggaaagacta ccagctctgt ctttctaccc tctaatttaa caatgcataa    6728

               gagtcaataa accctacttt tttaaaaaaa aaaaaaaaag         6768
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61

<210> 24
<211> 11
<212> PRT
<213> Homo sapiens

<400> 24

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Arg Gly Ala Ser Ile Leu Pro Leu Thr Asp Phe
1               5                   10
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<210> 25
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<212> PRT
<213> Homo sapiens

<400> 25

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Ile Leu Ile Cys Ile Phe Pro Ala Ala Pro Pro Leu Phe Leu Arg Pro
                5                   10                  15

Arg Pro Ile Ala Pro Arg Leu Pro Cys Ser Phe Leu Phe Pro Gly Phe
                20                  25                  30

Leu Pro Arg Val Ser Phe Pro Cys Ala Leu Gly Leu Pro Leu Ser Leu
                35                  40                  45

Leu Pro Arg Ser Leu Pro Leu Leu Ser Pro Ser Ser Ser Val Ser Ser
        50              55                  60

Val Leu Ser Leu Pro Leu Leu Leu Pro Arg Leu Leu Leu Leu Arg Ser
65                  70                  75                  80

Arg Pro Leu Pro Pro Pro Pro Val Pro Ala Asp Ala Arg Ile Val His
                85                  90                  95

Ala Leu Leu Ala Gly Arg Met Leu Gly Ser Ser Val Lys Ser Val Gln
                100                 105                 110

Pro Glu Val Glu Leu Ser Ser Gly Gly Gly Asp Glu Gly Ala Asp Glu
                115                 120                 125

Pro Arg Gly Ala Gly Arg Lys Ala Ala Ala Ala Asp Gly Arg Gly Met
        130                 135                 140

Leu Pro Lys Arg Ala Lys Ala Pro Gly Gly Gly Gly Met Ala Lys
145                 150                 155                 160

Ala Ser Ala Ala Glu Leu Lys Val Phe Lys Ser Gly Ser Val Asp Ser
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62

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                  165                  170                    175

Arg Val Pro Gly Gly Pro Pro Ala Ser Asn Leu Arg Lys Gln Lys Ser
            180              185              190

Leu Thr Asn Leu Ser Phe Leu Thr Asp Ser Glu Lys Lys Leu Gln Leu
            195              200              205

Tyr Glu Pro Glu Trp Ser Asp Asp Met Ala Lys Ala Pro Lys Gly Leu
210                      215              220

Gly Lys Val Gly Ser Lys Gly Arg Glu Ala Pro Leu Met Ser Lys Thr
225                  230              235                  240

Leu Ser Lys Ser Glu His Ser Leu Phe Gln Ala Lys Gly Ser Pro Ala
                245              250                  255

Gly Gly Ala Lys Thr Pro Leu Ala Pro Leu Ala Pro Asn Leu Gly Lys
            260              265              270

Pro Ser Arg Ile Pro Arg Gly Pro Tyr Ala Glu Val Lys Pro Leu Ser
            275              280              285

Lys Ala Pro Glu Ala Ala Val Ser Glu Asp Gly Lys Ser Asp Asp Glu
290                  295              300

Leu Leu Ser Ser Lys Ala Lys Ala Gln Lys Ser Ser Gly Pro Val Pro
305                  310              315                  320

Ser Ala Lys Gly Gln Glu Glu Arg Ala Phe Leu Lys Val Asp Pro Glu
                325              330              335

Leu Val Val Thr Val Leu Gly Asp Leu Glu Gln Leu Leu Phe Ser Gln
            340              345              350

Met Leu Asp Pro Glu Ser Gln Arg Lys Arg Thr Val Gln Asn Val Leu
            355              360              365

Asp Leu Arg Gln Asn Leu Glu Glu Thr Met Ser Ser Leu Arg Gly Ser
370                  375              380

Gln Val Thr His Ser Ser Leu Glu Met Thr Cys Tyr Asp Ser Asp Asp
385                  390              395                  400

Ala Asn Pro Arg Ser Val Ser Ser Leu Ser Asn Arg Ser Tyr Pro Leu
                405              410              415

Ser Trp Arg Tyr Gly Gln Ser Ser Pro Arg Leu Gln Ala Gly Asp Ala
            420              425              430

Pro Ser Val Gly Gly Ser Cys Arg Ser Glu Gly Thr Pro Ala Trp Tyr
            435              440              445

Met His Gly Glu Arg Ala His Tyr Ser His Thr Met Pro Met Arg Ser
450                  455              460
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Pro Ser Lys Leu Ser His Ile Ser Arg Leu Glu Leu Val Glu Ser Leu
465             470             475             480

Asp Ser Asp Glu Val Asp Leu Lys Ser Gly Tyr Met Ser Asp Ser Asp
                485             490             495

Leu Met Gly Lys Thr Met Thr Glu Asp Asp Ile Thr Thr Gly Trp
            500             505             510

Asp Glu Ser Ser Ser Ile Ser Ser Gly Leu Ser Asp Ala Ser Asp Asn
            515             520             525

Leu Ser Ser Glu Glu Phe Asn Ala Ser Ser Ser Leu Asn Ser Leu Pro
        530             535             540

Ser Thr Pro Thr Ala Ser Arg Arg Asn Ser Thr Ile Val Leu Arg Thr
545             550             555             560

Asp Ser Glu Lys Arg Ser Leu Ala Glu Ser Gly Leu Ser Trp Phe Ser
                565             570             575

Glu Ser Glu Glu Lys Ala Pro Lys Lys Leu Glu Tyr Asp Ser Gly Ser
            580             585             590

Leu Lys Met Glu Pro Gly Thr Ser Lys Trp Arg Arg Glu Arg Pro Glu
        595             600             605

Ser Cys Asp Asp Ser Ser Lys Gly Gly Glu Leu Lys Lys Pro Ile Ser
    610             615             620

Leu Gly His Pro Gly Ser Leu Lys Lys Gly Lys Thr Pro Pro Val Ala
625             630             635             640

Val Thr Ser Pro Ile Thr His Thr Ala Gln Ser Ala Leu Lys Val Ala
            645             650             655

Gly Lys Pro Glu Gly Lys Ala Thr Asp Lys Gly Lys Leu Ala Val Lys
            660             665             670

Asn Thr Gly Leu Gln Arg Ser Ser Ser Asp Ala Gly Arg Asp Arg Leu
        675             680             685

Ser Asp Ala Lys Lys Pro Pro Ser Gly Ile Ala Arg Pro Ser Thr Ser
    690             695             700

Gly Ser Phe Gly Tyr Lys Lys Pro Pro Pro Ala Thr Gly Thr Ala Thr
705             710             715             720

Val Met Gln Thr Gly Gly Ser Ala Thr Leu Ser Lys Ile Gln Lys Ser
            725             730             735

Ser Gly Ile Pro Val Lys Pro Val Asn Gly Arg Lys Thr Ser Leu Asp
            740             745             750

Val Ser Asn Ser Ala Glu Pro Gly Phe Leu Ala Pro Gly Ala Arg Ser
        755             760             765
```

64

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Asn Ile Gln Tyr Arg Ser Leu Pro Arg Pro Ala Lys Ser Ser Ser Met
    770                 775             780

Ser Val Thr Gly Gly Arg Gly Gly Pro Arg Pro Val Ser Ser Ser Ile
785                 790             795                 800

Asp Pro Ser Leu Leu Ser Thr Lys Gln Gly Gly Leu Thr Pro Ser Arg
                805             810                 815

Leu Lys Glu Pro Thr Lys Val Ala Ser Gly Arg Thr Thr Pro Ala Pro
                820             825                 830

Val Asn Gln Thr Asp Arg Glu Lys Glu Lys Ala Lys Ala Lys Ala Val
        835             840             845

Ala Leu Asp Ser Asp Asn Ile Ser Leu Lys Ser Ile Gly Ser Pro Glu
    850             855             860

Ser Thr Pro Lys Asn Gln Ala Ser His Pro Thr Ala Thr Lys Leu Ala
865             870             875                 880

Glu Leu Pro Pro Thr Pro Leu Arg Ala Thr Ala Lys Ser Phe Val Lys
            885             890             895

Pro Pro Ser Leu Ala Asn Leu Asp Lys Val Asn Ser Asn Ser Leu Asp
        900             905             910

Leu Pro Ser Ser Ser Asp Thr Thr His Ala Ser Lys Val Pro Asp Leu
        915             920             925

His Ala Thr Ser Ser Ala Ser Gly Gly Pro Leu Pro Ser Cys Phe Thr
    930             935             940

Pro Ser Pro Ala Pro Ile Leu Asn Ile Asn Ser Ala Ser Phe Ser Gln
945             950             955                 960

Gly Leu Glu Leu Met Ser Gly Phe Ser Val Pro Lys Glu Thr Arg Met
            965             970             975

Tyr Pro Lys Leu Ser Gly Leu His Arg Ser Met Glu Ser Leu Gln Met
            980             985             990

Pro Met Ser Leu Pro Ser Ala Phe Pro Ser Ser Thr Pro Val Pro Thr
        995             1000            1005

Pro Pro Ala Pro Pro Ala Ala Pro Thr Glu Glu Glu Thr Glu Glu Leu
    1010            1015            1020

Thr Trp Ser Gly Ser Pro Arg Ala Gly Gln Leu Asp Ser Asn Gln Arg
1025            1030            1035            1040

Asp Arg Asn Thr Leu Pro Lys Lys Gly Leu Arg Tyr Gln Leu Gln Ser
                1045            1050            1055

Gln Glu Glu Thr Lys Glu Arg Arg His Ser His Thr Ile Gly Gly Leu
                1060            1065            1070
```

65

Pro Glu Ser Asp Asp Gln Ser Glu Leu Pro Ser Pro Pro Ala Leu Pro
        1075   1080   1085

Met Ser Leu Ser Ala Lys Gly Gln Leu Thr Asn Ile Val Ser Pro Thr
        1090   1095   1100

Ala Ala Thr Thr Pro Arg Ile Thr Arg Ser Asn Ser Ile Pro Thr His
1105   1110   1115   1120

Glu Ala Ala Phe Glu Leu Tyr Ser Gly Ser Gln Met Gly Ser Thr Leu
            1125   1130   1135

Ser Leu Ala Glu Arg Pro Lys Gly Met Ile Arg Ser Gly Ser Phe Arg
            1140   1145   1150

Asp Pro Thr Asp Asp Val His Gly Ser Val Leu Ser Leu Ala Ser Ser
        1155   1160   1165

Ala Ser Ser Thr Tyr Ser Ser Ala Glu Glu Arg Met Gln Ser Glu Gln
        1170   1175   1180

Ile Arg Lys Leu Arg Arg Glu Leu Glu Ser Ser Gln Glu Lys Val Ala
1185   1190   1195   1200

Thr Leu Thr Ser Gln Leu Ser Ala Asn Ala Asn Leu Val Ala Ala Phe
            1205   1210   1215

Glu Gln Ser Leu Val Asn Met Thr Ser Arg Leu Arg His Leu Ala Glu
            1220   1225   1230

Thr Ala Glu Glu Lys Asp Thr Glu Leu Leu Asp Leu Arg Glu Thr Ile
        1235   1240   1245

Asp Phe Leu Lys Lys Lys Asn Ser Glu Ala Gln Ala Val Ile Gln Gly
        1250   1255   1260

Ala Leu Asn Ala Ser Glu Thr Thr Pro Lys Glu Leu Arg Ile Lys Arg
1265   1270   1275   1280

Gln Asn Ser Ser Asp Ser Ile Ser Ser Leu Asn Ser Ile Thr Ser His
            1285   1290   1295

Ser Ser Ile Gly Ser Ser Lys Asp Ala Asp Ala Lys Lys Lys Lys Lys
        1300   1305   1310

Lys Ser Trp Leu Arg Ser Ser Phe Asn Lys Ala Phe Ser Ile Lys Lys
        1315   1320   1325

Gly Pro Lys Ser Ala Ser Ser Tyr Ser Asp Ile Glu Glu Ile Ala Thr
        1330   1335   1340

Pro Asp Ser Ser Ala Pro Ser Ser Pro Lys Leu Gln His Gly Ser Thr
1345   1350   1355   1360

Glu Thr Ala Ser Pro Ser Ile Lys Ser Ser Thr Ser Ser Ser Val Gly

66

```
                  1365                    1370                    1375

     Thr Asp Val Thr Glu Gly Pro Ala His Pro Ala Pro His Thr Arg Leu
              1380                    1385                    1390

     Phe His Ala Asn Glu Glu Glu Glu Pro Glu Lys Lys Glu Val Ser Glu
              1395                    1400                    1405

     Leu Arg Ser Glu Leu Trp Glu Lys Glu Met Lys Leu Thr Asp Ile Arg
              1410                    1415                    1420

     Leu Glu Ala Leu Asn Ser Ala His Gln Leu Asp Gln Leu Arg Glu Thr
         1425                    1430                    1435                    1440

     Met His Asn Met Gln Leu Glu Val Asp Leu Leu Glu Ala Glu Asn Asp
                  1445                    1450                    1455


     Arg Leu Lys Val Ala Pro Gly Pro Ser Ser Gly Ser Thr Pro Gly Gln
              1460                    1465                    1470

     Val Pro Gly Ser Ser Ala Leu Ser Ser Pro Arg Arg Ser Leu Gly Leu
              1475                    1480                    1485

     Ala Leu Thr His Ser Phe Gly Pro Ser Leu Ala Asp Thr Asp Leu Ser
              1490                    1495                    1500

     Pro Met Asp Gly Ile Ser Thr Cys Gly Pro Lys Glu Glu Val Thr Leu
         1505                    1510                    1515                    1520

     Arg Val Val Val Arg Met Pro Pro Gln His Ile Ile Lys Gly Asp Leu
                  1525                    1530                    1535

     Lys Gln Gln Glu Phe Phe Leu Gly Cys Ser Lys Val Ser Gly Lys Val
              1540                    1545                    1550

     Asp Trp Lys Met Leu Asp Glu Ala Val Phe Gln Val Phe Lys Asp Tyr
              1555                    1560                    1565

     Ile Ser Lys Met Asp Pro Ala Ser Thr Leu Gly Leu Ser Thr Glu Ser
              1570                    1575                    1580

     Ile His Gly Tyr Ser Ile Ser His Val Lys Arg Val Leu Asp Ala Glu
         1585                    1590                    1595                    1600

     Pro Pro Glu Met Pro Pro Cys Arg Arg Gly Val Asn Asn Ile Ser Val
                  1605                    1610                    1615

     Ser Leu Lys Gly Leu Lys Glu Lys Cys Val Asp Ser Leu Val Phe Glu
              1620                    1625                    1630

     Thr Leu Ile Pro Lys Pro Met Met Gln His Tyr Ile Ser Leu Leu Leu
              1635                    1640                    1645

     Lys His Arg Arg Leu Val Leu Ser Gly Pro Ser Gly Thr Gly Lys Thr
              1650                    1655                    1660
```

67

Tyr Leu Thr Asn Arg Leu Ala Glu Tyr Leu Val Glu Arg Ser Gly Arg
1665   1670   1675   1680

Glu Val Thr Glu Gly Ile Val Ser Thr Phe Asn Met His Gln Gln Ser
                1685   1690   1695

Cys Lys Asp Leu Gln Leu Tyr Leu Ser Asn Leu Ala Asn Gln Ile Asp
                1700   1705   1710

Arg Glu Thr Gly Ile Gly Asp Val Pro Leu Val Ile Leu Leu Asp Asp
                1715   1720   1725

Leu Ser Glu Ala Gly Ser Ile Ser Glu Leu Val Asn Gly Ala Leu Thr
                1730   1735   1740

Cys Lys Tyr His Lys Cys Pro Tyr Ile Ile Gly Thr Thr Asn Gln Pro
1745   1750   1755   1760

Val Lys Met Thr Pro Asn His Gly Phe His Leu Ser Phe Arg Met Leu
                1765   1770   1775

Thr Phe Ser Asn Asn Val Glu Pro Ala Asn Gly Phe Leu Val Arg Tyr
                1780   1785   1790

Leu Arg Arg Lys Leu Val Glu Ser Asp Ser Asp Ile Asn Ala Asn Lys
                1795   1800   1805

Glu Glu Leu Leu Arg Val Leu Asp Trp Val Pro Lys Leu Trp Tyr His
                1810   1815   1820

Leu His Thr Phe Leu Glu Lys His Ser Thr Ser Asp Phe Leu Ile Gly
1825   1830   1835   1840

Pro Cys Phe Phe Leu Ser Cys Pro Ile Gly Ile Glu Asp Phe Arg Thr
                1845   1850   1855

Trp Phe Ile Asp Leu Trp Asn Asn Ser Ile Ile Pro Tyr Leu Gln Glu
                1860   1865   1870

Gly Ala Lys Asp Gly Ile Lys Val His Gly Gln Lys Ala Ala Trp Glu
                1875   1880   1885

Asp Pro Val Glu Trp Val Arg Asp Thr Leu Pro Trp Pro Ser Ala Gln
                1890   1895   1900

Gln Asp Gln Ser Lys Leu Tyr His Leu Pro Pro Pro Thr Val Gly Pro
1905   1910   1915   1920

His Ser Ile Ala Ser Pro Pro Glu Asp Arg Thr Val Lys Asp Ser Thr
                1925   1930   1935

Pro Ser Ser Leu Asp Ser Asp Pro Leu Met Ala Met Leu Leu Lys Leu
                1940   1945   1950

Gln Glu Ala Ala Asn Tyr Ile Glu Ser Pro Asp Arg Glu Thr Ile Leu
                1955   1960   1965

68

Asp Pro Asn Leu Gln Ala Thr Leu
　　1970　　　　　　1975

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  Asn Gln Pro Glu Arg Leu Asn Ser Gln Val Leu Gln Gly Leu Gln


gag cca gcg ggg gag ggg ctc ccg ctg cgg aag agc ggc tcg gtg gaa        94
Glu Pro Ala Gly Glu Gly Leu Pro Leu Arg Lys Ser Gly Ser Val Glu


aac ggg ttc gat acc cag atc tac aca gac tgg gcc aat cat tac cta       142
Asn Gly Phe Asp Thr Gln Ile Tyr Thr Asp Trp Ala Asn His Tyr Leu


gcc aaa tcc ggc cac aag cgt ctc atc agg gat ctc cag caa gat gtg       190
Ala Lys Ser Gly His Lys Arg Leu Ile Arg Asp Leu Gln Gln Asp Val


aca gat ggc gtc ctc ctg gcc cag att atc cag gtt gtg gca aat gaa       238
Thr Asp Gly Val Leu Leu Ala Gln Ile Ile Gln Val Val Ala Asn Glu


aag att gaa gac atc aat ggc tgt ccg aag aac aga tcc caa atg att       286
Lys Ile Glu Asp Ile Asn Gly Cys Pro Lys Asn Arg Ser Gln Met Ile


gaa aac ata gat gcc tgc ttg aat ttc ctg gca gct aag gga ata aac       334
Glu Asn Ile Asp Ala Cys Leu Asn Phe Leu Ala Ala Lys Gly Ile Asn


atc cag ggg ctg tct gca gaa gag atc agg aat gga aac ctc aag gcc       382
Ile Gln Gly Leu Ser Ala Glu Glu Ile Arg Asn Gly Asn Leu Lys Ala


att cta ggc ctc ttc ttc agc ctc tcc cga tac aag cag cag cag cag       430
Ile Leu Gly Leu Phe Phe Ser Leu Ser Arg Tyr Lys Gln Gln Gln Gln


cag ccc cag aag cag cac ctc tcc tca cct ctg ccg ccc gcc gta tcc       478
Gln Pro Gln Lys Gln His Leu Ser Ser Pro Leu Pro Pro Ala Val Ser
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69

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cag gtg gcc ggg gcc ccc tcc cag tgc cag gct ggc acc cct cag cag      526
Gln Val Ala Gly Ala Pro Ser Gln Cys Gln Ala Gly Thr Pro Gln Gln


cag gtg cca gtc act ccc caa gcc ccg tgc cag cct cac cag cca gcg      574
Gln Val Pro Val Thr Pro Gln Ala Pro Cys Gln Pro His Gln Pro Ala


cca cat cag cag tca aaa gca caa gct gaa atg cag tcc aga ctt cca      622
Pro His Gln Gln Ser Lys Ala Gln Ala Glu Met Gln Ser Arg Leu Pro


ggt cct acc gcg agg gta tcc gct gca ggc agc gag gcc aaa aca cgc      670
Gly Pro Thr Ala Arg Val Ser Ala Ala Gly Ser Glu Ala Lys Thr Arg


gga ggg tca act act gct aac aac cga cgc agc cag agc ttt aac aac      718
Gly Gly Ser Thr Thr Ala Asn Asn Arg Arg Ser Gln Ser Phe Asn Asn


tat gat aaa tcc aaa cca gtc acc tcc cca ccc cca ccg cca agc agc      766
Tyr Asp Lys Ser Lys Pro Val Thr Ser Pro Pro Pro Pro Pro Ser Ser


cac gag aaa gag cct ttg gca agt tca gcc tcc tcc cac ccc gga atg      814
His Glu Lys Glu Pro Leu Ala Ser Ser Ala Ser Ser His Pro Gly Met


agt gac aat gca cct gct tcc ttg gag agc ggc agc agc tcc acc cct      862
Ser Asp Asn Ala Pro Ala Ser Leu Glu Ser Gly Ser Ser Ser Thr Pro


act aat tgc agt acc tcc tcg gcc atc ccg cag ccc ggt gca gcc acc      910
Thr Asn Cys Ser Thr Ser Ser Ala Ile Pro Gln Pro Gly Ala Ala Thr


aag cct tgg cgc agc aaa tcc ctc agc gtg aag cac agt gcc acg gta      958
Lys Pro Trp Arg Ser Lys Ser Leu Ser Val Lys His Ser Ala Thr Val


tcc atg ctc tcg gtc aag cct cct ggg cct gag gcc ccc agg ccc aca     1006
Ser Met Leu Ser Val Lys Pro Pro Gly Pro Glu Ala Pro Arg Pro Thr


cct gaa gcc atg aag ccg gcc ccc aac aat cag aag tcc atg ctg gaa     1054
Pro Glu Ala Met Lys Pro Ala Pro Asn Asn Gln Lys Ser Met Leu Glu


aag ctg aaa ctt ttc aac agt aaa ggg ggc tca aag gca ggt gag ggg     1102
Lys Leu Lys Leu Phe Asn Ser Lys Gly Gly Ser Lys Ala Gly Glu Gly


ccg ggg tcc cgg gac aca agc tgt gag cgg ctg gag act ctg ccc agc     1150
Pro Gly Ser Arg Asp Thr Ser Cys Glu Arg Leu Glu Thr Leu Pro Ser
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70

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ttc gaa gag agc gag gag ctg gag gcc gcc agt cgc atg ctc acc acc      1198
Phe Glu Glu Ser Glu Glu Leu Glu Ala Ala Ser Arg Met Leu Thr Thr


gtg ggc cct gct tcc agc agc ccc aag att gca ctc aag ggc att gcc      1246
Val Gly Pro Ala Ser Ser Ser Pro Lys Ile Ala Leu Lys Gly Ile Ala


cag agg act ttt agc cgg gca ctg acc aac aag aag agt tct ctg aaa      1294
Gln Arg Thr Phe Ser Arg Ala Leu Thr Asn Lys Lys Ser Ser Leu Lys


ggc aat gag aaa gag aag gag aaa caa cag cgg gag aag gat aag gag      1342
Gly Asn Glu Lys Glu Lys Glu Lys Gln Gln Arg Glu Lys Asp Lys Glu


aaa agc aag gac ctt gcc aag aga gcc tct gtg acg gag agg ctg gac      1390
Lys Ser Lys Asp Leu Ala Lys Arg Ala Ser Val Thr Glu Arg Leu Asp


ctc aag gag gag cca aaa gaa gac ccc agt gga gca gct gtg ccc gag      1438
Leu Lys Glu Glu Pro Lys Glu Asp Pro Ser Gly Ala Ala Val Pro Glu


atg cca aaa aag tcc tcc aag att gcc agc ttc atc ccc aaa ggg ggg      1486
Met Pro Lys Lys Ser Ser Lys Ile Ala Ser Phe Ile Pro Lys Gly Gly


aag ctc aac agt gcc aag aag gag ccc atg gcc cct tcc cac agt gga      1534
Lys Leu Asn Ser Ala Lys Lys Glu Pro Met Ala Pro Ser His Ser Gly


ata cca aaa cca gga atg aag agc atg ccc ggg aaa tcc cca agt gcc      1582
Ile Pro Lys Pro Gly Met Lys Ser Met Pro Gly Lys Ser Pro Ser Ala


cca gcg cct tcc aag gaa ggg gag cgg agc cgg agt ggg aag ctg agc      1630
Pro Ala Pro Ser Lys Glu Gly Glu Arg Ser Arg Ser Gly Lys Leu Ser


tca gga ctc ccc cag cag aag ccc cag ctg gac ggc aga cac tcc agt      1678
Ser Gly Leu Pro Gln Gln Lys Pro Gln Leu Asp Gly Arg His Ser Ser


tcc tct tcc agc ctg gcg tcc tca gaa gga aaa ggc cca gga ggg acc      1726
Ser Ser Ser Ser Leu Ala Ser Ser Glu Gly Lys Gly Pro Gly Gly Thr


acc ctg aac cac agc atc agc agc cag act gtc agt ggg tct gtc ggg      1774
Thr Leu Asn His Ser Ile Ser Ser Gln Thr Val Ser Gly Ser Val Gly


acc acc cag acc aca gga agc aat acc gtc agt gtt cag cta cct cag      1822
Thr Thr Gln Thr Thr Gly Ser Asn Thr Val Ser Val Gln Leu Pro Gln
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71

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ccc cag cag caa tac aac cat ccc aac act gcc acg gtt gca cct ttc       1870
Pro Gln Gln Gln Tyr Asn His Pro Asn Thr Ala Thr Val Ala Pro Phe


ctg tac agg tct cag acg gac act gaa ggg aat gtt act gcc gag tca       1918
Leu Tyr Arg Ser Gln Thr Asp Thr Glu Gly Asn Val Thr Ala Glu Ser


agc tca aca ggt gtg agc gtg gag ccc agc cac ttc acc aag act gga       1966
Ser Ser Thr Gly Val Ser Val Glu Pro Ser His Phe Thr Lys Thr Gly


cag cct gct ctg gaa gaa ctc act ggg gaa gat cct gag gct cgg cgg       2014
Gln Pro Ala Leu Glu Glu Leu Thr Gly Glu Asp Pro Glu Ala Arg Arg


ctg cgg aca gtg aag aac atc gct gat ctg cgg cag aat ttg gag gaa       2062
Leu Arg Thr Val Lys Asn Ile Ala Asp Leu Arg Gln Asn Leu Glu Glu


acc atg tcc agt tta agg gga act cag gtt aca cac agc aca ttg gaa       2110
Thr Met Ser Ser Leu Arg Gly Thr Gln Val Thr His Ser Thr Leu Glu


acc acg ttt gac acc aat gtc acc acg gag atg agt ggc cgt agc ata       2158
Thr Thr Phe Asp Thr Asn Val Thr Thr Glu Met Ser Gly Arg Ser Ile


ctc agc ttg aca ggg agg ccc aca cct ctg tcc tgg aga ctg ggc cag       2206
Leu Ser Leu Thr Gly Arg Pro Thr Pro Leu Ser Trp Arg Leu Gly Gln


tcc agc cct cgg ctc caa gca gga gac gcc ccc tca atg ggc aat ggg       2254
Ser Ser Pro Arg Leu Gln Ala Gly Asp Ala Pro Ser Met Gly Asn Gly


tat ccc cct cga gcc aac gcc agc agg ttc atc aac act gag tca ggt       2302
Tyr Pro Pro Arg Ala Asn Ala Ser Arg Phe Ile Asn Thr Glu Ser Gly


cgc tat gtg tac tcc gcc cct ctg aga agg cag ctg gcc tcc cgg ggc       2350
Arg Tyr Val Tyr Ser Ala Pro Leu Arg Arg Gln Leu Ala Ser Arg Gly


agt agt gtc tgc cac gtg gac gtc tca gac aag gca gga gat gag atg       2398
Ser Ser Val Cys His Val Asp Val Ser Asp Lys Ala Gly Asp Glu Met


gac ctg gaa ggc atc agc atg gac gcc ccc ggc tac atg agc gat ggg       2446
Asp Leu Glu Gly Ile Ser Met Asp Ala Pro Gly Tyr Met Ser Asp Gly


gat gtt ctg agc aag aac atc cgg acc gat gac att aca agc gga tac       2494
Asp Val Leu Ser Lys Asn Ile Arg Thr Asp Asp Ile Thr Ser Gly Tyr


atg act gat ggt gga ctt ggc ctc tat acc cgt cgc ctg aac cgg ctc       2542
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72

Met Thr Asp Gly Gly Leu Gly Leu Tyr Thr Arg Arg Leu Asn Arg Leu

cct gat ggg atg gct gtg gta cgg gag acc ctg caa cga aat acc tcc   2590
Pro Asp Gly Met Ala Val Val Arg Glu Thr Leu Gln Arg Asn Thr Ser

ctg ggc ctc gga gac gct gac agc tgg gac gac agc agc tcc gtc agc   2638
Leu Gly Leu Gly Asp Ala Asp Ser Trp Asp Asp Ser Ser Ser Val Ser

agc ggc atc agc gac acc ata gac aac ctc agc act gat gac atc aac   2686
Ser Gly Ile Ser Asp Thr Ile Asp Asn Leu Ser Thr Asp Asp Ile Asn

acc agc tcc tcc atc agc tct tat gcc aac aca cct gcc tcc tct cga   2734
Thr Ser Ser Ser Ile Ser Ser Tyr Ala Asn Thr Pro Ala Ser Ser Arg

aaa aac ctg gat gtg cag act gat gct gag aag cac tca cag gtg gag   2782
Lys Asn Leu Asp Val Gln Thr Asp Ala Glu Lys His Ser Gln Val Glu

agg aat tcc ctg tgg tct ggt gat gat gtc aag aaa tca gac gga ggc   2830
Arg Asn Ser Leu Trp Ser Gly Asp Asp Val Lys Lys Ser Asp Gly Gly

tca gac agc ggc ata aaa atg gag cca ggt tcc aag tgg agg cgg aat   2878
Ser Asp Ser Gly Ile Lys Met Glu Pro Gly Ser Lys Trp Arg Arg Asn

cct tct gat gtg tct gac gag tcc gac aaa agc acg tcg ggc aag aag   2926
Pro Ser Asp Val Ser Asp Glu Ser Asp Lys Ser Thr Ser Gly Lys Lys

aat cct gtc atc tcc cag aca ggc tca tgg cgg cga ggc atg aca gct   2974
Asn Pro Val Ile Ser Gln Thr Gly Ser Trp Arg Arg Gly Met Thr Ala

cag gtg ggc atc acc atg cca agg acg aag gct tca gcc ccg gca ggc   3022
Gln Val Gly Ile Thr Met Pro Arg Thr Lys Ala Ser Ala Pro Ala Gly

gca ctg aag acc cca gga act gga aaa aca gac gac gca aag gtg tct   3070
Ala Leu Lys Thr Pro Gly Thr Gly Lys Thr Asp Asp Ala Lys Val Ser

gag aaa gga agg ctt tct cct aaa gcc tcc cag gtg aag cgc tcc cca   3118
Glu Lys Gly Arg Leu Ser Pro Lys Ala Ser Gln Val Lys Arg Ser Pro

tca gat gca ggc cgg agc agt ggt gac gaa tcc aaa aag ccc ctc ccc   3166
Ser Asp Ala Gly Arg Ser Ser Gly Asp Glu Ser Lys Lys Pro Leu Pro

agc agc tct agg aca cct act gcc aat gcc aac agc ttt ggg ttc aag   3214

73

Ser Ser Ser Arg Thr Pro Thr Ala Asn Ala Asn Ser Phe Gly Phe Lys

aag cag agt ggt tcc gcc acc ggc ctg gcc atg atc aca gcc agc ggg   3262
Lys Gln Ser Gly Ser Ala Thr Gly Leu Ala Met Ile Thr Ala Ser Gly

gtg act gtc acc agc agg tca gcc aca ctg ggc aaa atc cca aag tca   3310
Val Thr Val Thr Ser Arg Ser Ala Thr Leu Gly Lys Ile Pro Lys Ser

tct gca ctc gtc agt cgg tct gct ggt cgg aag tca agt atg gat ggg   3358
Ser Ala Leu Val Ser Arg Ser Ala Gly Arg Lys Ser Ser Met Asp Gly

gct cag aat cag gat gac ggg tat cta gcc cta agc tcc cgg aca aac   3406
Ala Gln Asn Gln Asp Asp Gly Tyr Leu Ala Leu Ser Ser Arg Thr Asn

ctt cag tac cgg agt ttg ccg agg ccc agt aag tcc aac agc cgg aac   3454
Leu Gln Tyr Arg Ser Leu Pro Arg Pro Ser Lys Ser Asn Ser Arg Asn

ggg gct ggg aac agg tct agc acc agc agc ata gat tcc aac att agc   3502
Gly Ala Gly Asn Arg Ser Ser Thr Ser Ser Ile Asp Ser Asn Ile Ser

agc aag tcc gca ggc ctg cca gtg ccc aaa ctg agg gag cct tcc aaa   3550
Ser Lys Ser Ala Gly Leu Pro Val Pro Lys Leu Arg Glu Pro Ser Lys

aca gcc cta ggc agc tct cta cca ggt ctg gtc aac caa aca gac aag   3598
Thr Ala Leu Gly Ser Ser Leu Pro Gly Leu Val Asn Gln Thr Asp Lys

gag aaa ggc atc tca tca gac aac gag agt gtg gct tcc tgt aac tcg   3646
Glu Lys Gly Ile Ser Ser Asp Asn Glu Ser Val Ala Ser Cys Asn Ser

gtg aaa gtg aat ccg gca gcc cag cct gtg tcc agt ccg gct cag acc   3694
Val Lys Val Asn Pro Ala Ala Gln Pro Val Ser Ser Pro Ala Gln Thr

agt ctc cag cct gga gcc aag tac cca gat gtg gcc tct ccc aca ctc   3742
Ser Leu Gln Pro Gly Ala Lys Tyr Pro Asp Val Ala Ser Pro Thr Leu

cgc aga ctc ttt ggt ggg aag cct acc aag caa gtg ccc atc gcc aca   3790
Arg Arg Leu Phe Gly Gly Lys Pro Thr Lys Gln Val Pro Ile Ala Thr

gct gaa aac atg aaa aat tcg gtg gtc atc tcc aat cct cat gcc acc   3838
Ala Glu Asn Met Lys Asn Ser Val Val Ile Ser Asn Pro His Ala Thr

atg act cag caa ggt aac cta gac tcc ccg tca ggc agt ggc gtc ctg   3886
Met Thr Gln Gln Gly Asn Leu Asp Ser Pro Ser Gly Ser Gly Val Leu

74

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agc agt ggg agc agc agt cct ctc tac agc aag aat gtg gac ctc aac      3934
Ser Ser Gly Ser Ser Ser Pro Leu Tyr Ser Lys Asn Val Asp Leu Asn


cag tct ccg cta gcc tcc agc ccc agc tca gcc cac tcg gcc cct tcc      3982
Gln Ser Pro Leu Ala Ser Ser Pro Ser Ser Ala His Ser Ala Pro Ser


aac agc ctc acc tgg ggc acc aac gcc agc agc tcc tcc gca gtt agc      4030
Asn Ser Leu Thr Trp Gly Thr Asn Ala Ser Ser Ser Ser Ala Val Ser


aag gat ggc ctg ggc ttt cag tct gtc agc agc ctc cac acc agc tgt      4078
Lys Asp Gly Leu Gly Phe Gln Ser Val Ser Ser Leu His Thr Ser Cys


gag tcc atc gac atc tcc ctc agc agt gga ggg gtc ccc agc cac aat      4126
Glu Ser Ile Asp Ile Ser Leu Ser Ser Gly Gly Val Pro Ser His Asn


tct tcc act ggc ctc atc gcc tcc tcc aag gac gac tcc ttg act ccc      4174
Ser Ser Thr Gly Leu Ile Ala Ser Ser Lys Asp Asp Ser Leu Thr Pro


ttt gtc aga act aac agt gtg aag acc aca ctg tca gaa agc cct ctc      4222
Phe Val Arg Thr Asn Ser Val Lys Thr Thr Leu Ser Glu Ser Pro Leu


tct tcc cct gct gct agc cct aag ttc tgc aga agt act ctg ccc agg      4270
Ser Ser Pro Ala Ala Ser Pro Lys Phe Cys Arg Ser Thr Leu Pro Arg


aaa cag gac agt gac ccg cac ctt gat agg aac act ttg cct aag aaa      4318
Lys Gln Asp Ser Asp Pro His Leu Asp Arg Asn Thr Leu Pro Lys Lys


gga ctc agg tat act ccc acc tcc cag ctt cgc acg caa gaa gat gca      4366
Gly Leu Arg Tyr Thr Pro Thr Ser Gln Leu Arg Thr Gln Glu Asp Ala


aaa gaa tgg tta cgg tcc cat tct gca gga ggc ctt cag gac acc gct      4414
Lys Glu Trp Leu Arg Ser His Ser Ala Gly Gly Leu Gln Asp Thr Ala


gcc aat tcc ccc ttt tcc tct ggc tcc agc gtg act tct ccc tcc gga      4462
Ala Asn Ser Pro Phe Ser Ser Gly Ser Ser Val Thr Ser Pro Ser Gly


aca aga ttc aac ttt tcc cag ctt gcg agt ccc acc act gtc acc cag      4510
Thr Arg Phe Asn Phe Ser Gln Leu Ala Ser Pro Thr Thr Val Thr Gln


atg agc ttg tcc aac ccg acc atg ctg agg act cac agc ctc tcc aat      4558
Met Ser Leu Ser Asn Pro Thr Met Leu Arg Thr His Ser Leu Ser Asn
```

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gct gat ggg cag tat gat cca tac act gac agc cgc ttc cgg aat agc        4606
Ala Asp Gly Gln Tyr Asp Pro Tyr Thr Asp Ser Arg Phe Arg Asn Ser


tcc atg tcc ctg gat gag aag agc aga acc atg agc cgt tca ggc tca        4654
Ser Met Ser Leu Asp Glu Lys Ser Arg Thr Met Ser Arg Ser Gly Ser


ttc cgg gat ggg ttt gaa gaa gtt cat gga tcc tca ctc tcc ttg gtt        4702
Phe Arg Asp Gly Phe Glu Glu Val His Gly Ser Ser Leu Ser Leu Val


tcc agc aca tcg tca gtt tat tct aca cca gaa gaa aaa tgc cag tca        4750
Ser Ser Thr Ser Ser Val Tyr Ser Thr Pro Glu Glu Lys Cys Gln Ser


gag att cgc aag ctg cgg cgg gaa ctg gat gcc tcc cag gag aaa gtt        4798
Glu Ile Arg Lys Leu Arg Arg Glu Leu Asp Ala Ser Gln Glu Lys Val


tca gct ttg acc acc cag ctg aca gca aat gct cac ctt gtg gct gcc        4846
Ser Ala Leu Thr Thr Gln Leu Thr Ala Asn Ala His Leu Val Ala Ala


ttt gaa cag agt ctt ggt aac atg aca atc agg ctc cag agt ctg acc        4894
Phe Glu Gln Ser Leu Gly Asn Met Thr Ile Arg Leu Gln Ser Leu Thr


atg aca gct gag cag aag gat tca gaa ctg aat gag tta aga aaa acc        4942
Met Thr Ala Glu Gln Lys Asp Ser Glu Leu Asn Glu Leu Arg Lys Thr


att gag ctg cta aag aaa cag aac gca gct gcc cag gct gcc att aat        4990
Ile Glu Leu Leu Lys Lys Gln Asn Ala Ala Ala Gln Ala Ala Ile Asn


gga gta att aac aca cct gag ctc aac tgc aaa gga aac ggc act gcc        5038
Gly Val Ile Asn Thr Pro Glu Leu Asn Cys Lys Gly Asn Gly Thr Ala


cag tct gca gac ctc cgc atc cgc agg cag cac tcc tca gac agc gtc        5086
Gln Ser Ala Asp Leu Arg Ile Arg Arg Gln His Ser Ser Asp Ser Val


tcc agc atc aac agt gcc acc agc cac tcc agt gtg ggc agc aac ata        5134
Ser Ser Ile Asn Ser Ala Thr Ser His Ser Ser Val Gly Ser Asn Ile


gag agt gac tca aag aag aag aag agg aag aac tgg gtc aat gag tta        5182
Glu Ser Asp Ser Lys Lys Lys Lys Arg Lys Asn Trp Val Asn Glu Leu


cgc agc tcc ttc aag caa gct ttc ggg aag aag aag tcc cca aaa tct        5230
Arg Ser Ser Phe Lys Gln Ala Phe Gly Lys Lys Lys Ser Pro Lys Ser
```

76

```
gcg tcc tct cat tca gat att gag gag atg acg gat tct tct ttg cct        5278
Ala Ser Ser His Ser Asp Ile Glu Glu Met Thr Asp Ser Ser Leu Pro


tcc tca cca aag tta cca cac aat ggg tcc aca ggt tcc acc cca ctg        5326
Ser Ser Pro Lys Leu Pro His Asn Gly Ser Thr Gly Ser Thr Pro Leu


ctg agg aat tct cac tcc aac tct cta att tca gaa tgc atg gat agt        5374
Leu Arg Asn Ser His Ser Asn Ser Leu Ile Ser Glu Cys Met Asp Ser


gaa gct gag acc gtc atg cag ctc cga aat gag tta aga gac aag gag        5422
Glu Ala Glu Thr Val Met Gln Leu Arg Asn Glu Leu Arg Asp Lys Glu


atg aag ctg aca gat atc cgc tta gaa gct ctc agt tct gcc cac cag        5470
Met Lys Leu Thr Asp Ile Arg Leu Glu Ala Leu Ser Ser Ala His Gln


ctg gac cag ctc cgg gag gcc atg aac agg atg cag agt gaa ata gag        5518
Leu Asp Gln Leu Arg Glu Ala Met Asn Arg Met Gln Ser Glu Ile Glu


aag ctg aaa gct gag aat gat cgg ctg aag tca gag tct caa ggc agt        5566
Lys Leu Lys Ala Glu Asn Asp Arg Leu Lys Ser Glu Ser Gln Gly Ser


ggc tgc agc cgg gct cct tcc caa gtg tcc atc tct gcc tcc ccg agg        5614
Gly Cys Ser Arg Ala Pro Ser Gln Val Ser Ile Ser Ala Ser Pro Arg


cag tcc atg ggc ctc tcc cag cac agc ttg aac ctc act gag tca acc        5662
Gln Ser Met Gly Leu Ser Gln His Ser Leu Asn Leu Thr Glu Ser Thr


agc ctg gac atg ttg ctg gat gac act ggt gaa tgc tcg gct cgg aag        5710
Ser Leu Asp Met Leu Leu Asp Asp Thr Gly Glu Cys Ser Ala Arg Lys


gaa gga ggc agg cat gtt aag ata gtt gtc agc ttt cag gag gaa atg        5758
Glu Gly Gly Arg His Val Lys Ile Val Val Ser Phe Gln Glu Glu Met


aag tgg aag gag gat tcc aga cca cat ctc ttt ctt att ggc tgc att        5806
Lys Trp Lys Glu Asp Ser Arg Pro His Leu Phe Leu Ile Gly Cys Ile


gga gtt agt ggc aag acg aag tgg gat gtg ctc gat ggg gtg gtt aga        5854
Gly Val Ser Gly Lys Thr Lys Trp Asp Val Leu Asp Gly Val Val Arg


cgg ctg ttc aaa gaa tac atc att cat gtc gac cca gtg agt cag cta        5902
Arg Leu Phe Lys Glu Tyr Ile Ile His Val Asp Pro Val Ser Gln Leu


ggg ctg aat tca gac agc gtt ctt ggc tac agc att gga gaa atc aag        5950
Gly Leu Asn Ser Asp Ser Val Leu Gly Tyr Ser Ile Gly Glu Ile Lys
```

77

```
cgc agc aac act tcc gaa aca ccg gag ctg ctt cct tgt ggc tat ctg        5998
Arg Ser Asn Thr Ser Glu Thr Pro Glu Leu Leu Pro Cys Gly Tyr Leu


gtt gga gag aac acg acc atc tca gtg act gtg aaa ggg ctc gca gaa        6046
Val Gly Glu Asn Thr Thr Ile Ser Val Thr Val Lys Gly Leu Ala Glu


aac agc ctg gac tca ctg gtg ttt gag tcc ttg att ccc aag ccc atc        6094
Asn Ser Leu Asp Ser Leu Val Phe Glu Ser Leu Ile Pro Lys Pro Ile


ctg cag cgc tac gtc tcc ctc ctg ata gag cac cgt cgg atc att ctc        6142
Leu Gln Arg Tyr Val Ser Leu Leu Ile Glu His Arg Arg Ile Ile Leu


tct ggc ccc agc ggc act ggg aaa acc tac ctg gcc aac cgg ctg tct        6190
Ser Gly Pro Ser Gly Thr Gly Lys Thr Tyr Leu Ala Asn Arg Leu Ser


gag tat ata gtg ctt cga gag gga cgg gag ttg aca gac ggg gtt atc        6238
Glu Tyr Ile Val Leu Arg Glu Gly Arg Glu Leu Thr Asp Gly Val Ile


gcc acc ttt aac gtg gac cat aag tcc agc aag gaa ttg cgc cag tac        6286
Ala Thr Phe Asn Val Asp His Lys Ser Ser Lys Glu Leu Arg Gln Tyr


ctg tcc aac ctt gct gac cag tgc aac agt gag aac aat gct gtg gac        6334
Leu Ser Asn Leu Ala Asp Gln Cys Asn Ser Glu Asn Asn Ala Val Asp


atg ccc ctc gtc atc atc ctg gac aac cta cac cac gtg agc tct ctg        6382
Met Pro Leu Val Ile Ile Leu Asp Asn Leu His His Val Ser Ser Leu


ggc gag atc ttc aat ggg ctg ctc aac tgc aag tac cac aaa tgc cct        6430
Gly Glu Ile Phe Asn Gly Leu Leu Asn Cys Lys Tyr His Lys Cys Pro


tac ata att ggc aca atg aac cag gct acc tct tcg act ccc aac ctg        6478
Tyr Ile Ile Gly Thr Met Asn Gln Ala Thr Ser Ser Thr Pro Asn Leu


cag ctt cac cat aac ttc aga tgg gtg ctt tgt gcc aac cac acg gag        6526
Gln Leu His His Asn Phe Arg Trp Val Leu Cys Ala Asn His Thr Glu


cct gtg aag ggt ttc ctt ggc cga ttc ctg agg agg aag ctc atg gaa        6574
Pro Val Lys Gly Phe Leu Gly Arg Phe Leu Arg Arg Lys Leu Met Glu


aca gag atc agt ggg cgg gtg cgc aat atg gag ctg gta aaa atc att        6622
Thr Glu Ile Ser Gly Arg Val Arg Asn Met Glu Leu Val Lys Ile Ile
```

78

```
gac tgg att ccc aag gtc tgg cat cac ctc aac cgc ttc ctg gag gct      6670
Asp Trp Ile Pro Lys Val Trp His His Leu Asn Arg Phe Leu Glu Ala


cac agt tcc tcg gac gtc acc atc ggc ccc cgg ctc ttc ctg tca tgc      6718
His Ser Ser Ser Asp Val Thr Ile Gly Pro Arg Leu Phe Leu Ser Cys


ccc atc gat gtg gac ggc tcg aga gtg tgg ttc acc gac ttg tgg aac      6766
Pro Ile Asp Val Asp Gly Ser Arg Val Trp Phe Thr Asp Leu Trp Asn


tat tcc att atc ccc tat ctc ctg gaa gcc gtc aga gaa gga ctc cag      6814
Tyr Ser Ile Ile Pro Tyr Leu Leu Glu Ala Val Arg Glu Gly Leu Gln


ctc tat gga agg cgc gcc ccc tgg gag gat cct gcc aag tgg gtg atg      6862
Leu Tyr Gly Arg Arg Ala Pro Trp Glu Asp Pro Ala Lys Trp Val Met


gac aca tat cca tgg gca gcc agc cca caa cag cac gag tgg cct ccc      6910
Asp Thr Tyr Pro Trp Ala Ala Ser Pro Gln Gln His Glu Trp Pro Pro


ctg ctg cag tta cgg cct gag gat gtc ggc ttc gac ggc tac tcc atg      6958
Leu Leu Gln Leu Arg Pro Glu Asp Val Gly Phe Asp Gly Tyr Ser Met


cct cgg gag gga tcg aca agc aag cag atg ccc ccc agt gat gct gaa      7006
Pro Arg Glu Gly Ser Thr Ser Lys Gln Met Pro Pro Ser Asp Ala Glu


ggt gac ccg ctg atg aac atg ctg atg agg ctg cag gag gca gcc aac      7054
Gly Asp Pro Leu Met Asn Met Leu Met Arg Leu Gln Glu Ala Ala Asn


tac tcc agc ccc cag agc tat gac agc gac tcc aac agc aac agc cat      7102
Tyr Ser Ser Pro Gln Ser Tyr Asp Ser Asp Ser Asn Ser Asn Ser His


cac gat gac atc ttg gac tcc tct ttg gag tcc act ctg tgacaggggc      7151
His Asp Asp Ile Leu Asp Ser Ser Leu Glu Ser Thr Leu


ccggagccca gcgccctcct cttctcctca ccgcattcca cctgcatccc ccacatcacc      7211

ctgaagatga cttcctgagc cagcccccag ccacagcctt agagctgcgg gaacaccgag      7271

acccccccgtc cttcagcctc gacctgggtg caggcatccc gggccagctg cctgcggacc      7331

gcttccttcc acagcgagaa ctgcactacc ttctgttgta ctttaattat tgttttgcct      7391

tgttgctgtg acctccctaa gacactgaag atacttctcg ggaaaggatc atcgccgttg      7451

aaatgaaaag agagacagag agagaaaaaa aaaagagaac ccacatgaag ctctgaaacc      7511
```

79

```
aaacagcatc ctgccatgag cttcccagag acagaagaga ctggagcaaa gtcggaaaca      7571

cagagaagca cggcttcccc tcagcacaga ccctccagac tgggtctcag agccgtgcca      7631

cccacccctcc cacacagccg gccacaggga gaactggtgc taaccagggt gcttgctttg     7691

gtcacgttca acgcactaca gagctacgac acaggggaac cttaggagca aataaaccgt      7751

gctttcatgt tttttaaaaa aaaaaaaaaa aa                                   7783
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<210> 27
<211> 2380
<212> PRT
<213> Homo sapiens

<400> 27

```
Asn Gln Pro Glu Arg Leu Asn Ser Gln Val Leu Gln Gly Leu Gln Glu
 1               5                  10                  15

Pro Ala Gly Glu Gly Leu Pro Leu Arg Lys Ser Gly Ser Val Glu Asn
             20                  25                  30

Gly Phe Asp Thr Gln Ile Tyr Thr Asp Trp Ala Asn His Tyr Leu Ala
             35                  40                  45

Lys Ser Gly His Lys Arg Leu Ile Arg Asp Leu Gln Gln Asp Val Thr
     50                  55                  60

Asp Gly Val Leu Leu Ala Gln Ile Ile Gln Val Val Ala Asn Glu Lys
 65                  70                  75                  80

Ile Glu Asp Ile Asn Gly Cys Pro Lys Asn Arg Ser Gln Met Ile Glu
                 85                  90                  95

Asn Ile Asp Ala Cys Leu Asn Phe Leu Ala Ala Lys Gly Ile Asn Ile
             100                 105                 110

Gln Gly Leu Ser Ala Glu Glu Ile Arg Asn Gly Asn Leu Lys Ala Ile
             115                 120                 125

Leu Gly Leu Phe Phe Ser Leu Ser Arg Tyr Lys Gln Gln Gln Gln Gln
     130                 135                 140

Pro Gln Lys Gln His Leu Ser Ser Pro Leu Pro Pro Ala Val Ser Gln
145                 150                 155                 160

Val Ala Gly Ala Pro Ser Gln Cys Gln Ala Gly Thr Pro Gln Gln Gln
                 165                 170                 175

Val Pro Val Thr Pro Gln Ala Pro Cys Gln Pro His Gln Pro Ala Pro
             180                 185                 190

His Gln Gln Ser Lys Ala Gln Ala Glu Met Gln Ser Arg Leu Pro Gly
```

80

```
            195              200              205
Pro Thr Ala Arg Val Ser Ala Ala Gly Ser Glu Ala Lys Thr Arg Gly
      210              215              220

Gly Ser Thr Thr Ala Asn Asn Arg Arg Ser Gln Ser Phe Asn Asn Tyr
225              230              235              240

Asp Lys Ser Lys Pro Val Thr Ser Pro Pro Pro Pro Ser Ser His
                245              250              255

Glu Lys Glu Pro Leu Ala Ser Ser Ala Ser Ser His Pro Gly Met Ser
              260              265              270

Asp Asn Ala Pro Ala Ser Leu Glu Ser Gly Ser Ser Ser Thr Pro Thr
              275              280              285

Asn Cys Ser Thr Ser Ser Ala Ile Pro Gln Pro Gly Ala Ala Thr Lys
      290              295              300

Pro Trp Arg Ser Lys Ser Leu Ser Val Lys His Ser Ala Thr Val Ser
305              310              315              320

Met Leu Ser Val Lys Pro Pro Gly Pro Glu Ala Pro Arg Pro Thr Pro
              325              330              335

Glu Ala Met Lys Pro Ala Pro Asn Asn Gln Lys Ser Met Leu Glu Lys
              340              345              350


Leu Lys Leu Phe Asn Ser Lys Gly Gly Ser Lys Ala Gly Glu Gly Pro
      355              360              365

Gly Ser Arg Asp Thr Ser Cys Glu Arg Leu Glu Thr Leu Pro Ser Phe
      370              375              380

Glu Glu Ser Glu Glu Leu Glu Ala Ala Ser Arg Met Leu Thr Thr Val
385              390              395              400

Gly Pro Ala Ser Ser Ser Pro Lys Ile Ala Leu Lys Gly Ile Ala Gln
              405              410              415

Arg Thr Phe Ser Arg Ala Leu Thr Asn Lys Lys Ser Ser Leu Lys Gly
      420              425              430

Asn Glu Lys Glu Lys Glu Lys Gln Gln Arg Glu Lys Asp Lys Glu Lys
      435              440              445

Ser Lys Asp Leu Ala Lys Arg Ala Ser Val Thr Glu Arg Leu Asp Leu
      450              455              460

Lys Glu Glu Pro Lys Glu Asp Pro Ser Gly Ala Ala Val Pro Glu Met
465              470              475              480

Pro Lys Lys Ser Ser Lys Ile Ala Ser Phe Ile Pro Lys Gly Gly Lys
              485              490              495
```

81

```
Leu Asn Ser Ala Lys Lys Glu Pro Met Ala Pro Ser His Ser Gly Ile
        500             505             510

Pro Lys Pro Gly Met Lys Ser Met Pro Gly Lys Ser Pro Ser Ala Pro
        515             520             525

Ala Pro Ser Lys Glu Gly Glu Arg Ser Arg Ser Gly Lys Leu Ser Ser
530             535             540

Gly Leu Pro Gln Gln Lys Pro Gln Leu Asp Gly Arg His Ser Ser Ser
545             550             555             560

Ser Ser Ser Leu Ala Ser Ser Glu Gly Lys Gly Pro Gly Gly Thr Thr
            565             570             575

Leu Asn His Ser Ile Ser Ser Gln Thr Val Ser Gly Ser Val Gly Thr
            580             585             590

Thr Gln Thr Thr Gly Ser Asn Thr Val Ser Val Gln Leu Pro Gln Pro
        595             600             605

Gln Gln Gln Tyr Asn His Pro Asn Thr Ala Thr Val Ala Pro Phe Leu
    610             615             620

Tyr Arg Ser Gln Thr Asp Thr Glu Gly Asn Val Thr Ala Glu Ser Ser
625             630             635             640

Ser Thr Gly Val Ser Val Glu Pro Ser His Phe Thr Lys Thr Gly Gln
            645             650             655

Pro Ala Leu Glu Glu Leu Thr Gly Glu Asp Pro Glu Ala Arg Arg Leu
            660             665             670

Arg Thr Val Lys Asn Ile Ala Asp Leu Arg Gln Asn Leu Glu Glu Thr
        675             680             685

Met Ser Ser Leu Arg Gly Thr Gln Val Thr His Ser Thr Leu Glu Thr
    690             695             700

Thr Phe Asp Thr Asn Val Thr Thr Glu Met Ser Gly Arg Ser Ile Leu
705             710             715             720

Ser Leu Thr Gly Arg Pro Thr Pro Leu Ser Trp Arg Leu Gly Gln Ser
            725             730             735

Ser Pro Arg Leu Gln Ala Gly Asp Ala Pro Ser Met Gly Asn Gly Tyr
            740             745             750

Pro Pro Arg Ala Asn Ala Ser Arg Phe Ile Asn Thr Glu Ser Gly Arg
            755             760             765

Tyr Val Tyr Ser Ala Pro Leu Arg Arg Gln Leu Ala Ser Arg Gly Ser
    770             775             780

Ser Val Cys His Val Asp Val Ser Asp Lys Ala Gly Asp Glu Met Asp
785             790             795             800
```

82

Leu Glu Gly Ile Ser Met Asp Ala Pro Gly Tyr Met Ser Asp Gly Asp
                805   810   815

Val Leu Ser Lys Asn Ile Arg Thr Asp Asp Ile Thr Ser Gly Tyr Met
                820   825   830

Thr Asp Gly Gly Leu Gly Leu Tyr Thr Arg Arg Leu Asn Arg Leu Pro
                835   840   845

Asp Gly Met Ala Val Val Arg Glu Thr Leu Gln Arg Asn Thr Ser Leu
        850   855   860

Gly Leu Gly Asp Ala Asp Ser Trp Asp Asp Ser Ser Ser Val Ser Ser
865   870   875   880

Gly Ile Ser Asp Thr Ile Asp Asn Leu Ser Thr Asp Asp Ile Asn Thr
                885   890   895

Ser Ser Ser Ile Ser Ser Tyr Ala Asn Thr Pro Ala Ser Ser Arg Lys
                900   905   910

Asn Leu Asp Val Gln Thr Asp Ala Glu Lys His Ser Gln Val Glu Arg
                915   920   925

Asn Ser Leu Trp Ser Gly Asp Asp Val Lys Lys Ser Asp Gly Gly Ser
        930   935   940

Asp Ser Gly Ile Lys Met Glu Pro Gly Ser Lys Trp Arg Arg Asn Pro
945   950   955   960

Ser Asp Val Ser Asp Glu Ser Asp Lys Ser Thr Ser Gly Lys Lys Asn
                965   970   975

Pro Val Ile Ser Gln Thr Gly Ser Trp Arg Arg Gly Met Thr Ala Gln
                980   985   990

Val Gly Ile Thr Met Pro Arg Thr Lys Ala Ser Ala Pro Ala Gly Ala
                995   1000   1005

Leu Lys Thr Pro Gly Thr Gly Lys Thr Asp Asp Ala Lys Val Ser Glu
        1010   1015   1020

Lys Gly Arg Leu Ser Pro Lys Ala Ser Gln Val Lys Arg Ser Pro Ser
1025   1030   1035   1040

Asp Ala Gly Arg Ser Ser Gly Asp Glu Ser Lys Lys Pro Leu Pro Ser
                1045   1050   1055

Ser Ser Arg Thr Pro Thr Ala Asn Ala Asn Ser Phe Gly Phe Lys Lys
        1060   1065   1070

Gln Ser Gly Ser Ala Thr Gly Leu Ala Met Ile Thr Ala Ser Gly Val
        1075   1080   1085

Thr Val Thr Ser Arg Ser Ala Thr Leu Gly Lys Ile Pro Lys Ser Ser

83

```
            1090                    1095                    1100

Ala Leu Val Ser Arg Ser Ala Gly Arg Lys Ser Ser Met Asp Gly Ala
1105                    1110                    1115                    1120

Gln Asn Gln Asp Asp Gly Tyr Leu Ala Leu Ser Ser Arg Thr Asn Leu
                    1125                    1130                    1135

Gln Tyr Arg Ser Leu Pro Arg Pro Ser Lys Ser Asn Ser Arg Asn Gly
                    1140                    1145                    1150

Ala Gly Asn Arg Ser Ser Thr Ser Ser Ile Asp Ser Asn Ile Ser Ser
                    1155                    1160                    1165

Lys Ser Ala Gly Leu Pro Val Pro Lys Leu Arg Glu Pro Ser Lys Thr
                    1170                    1175                    1180

Ala Leu Gly Ser Ser Leu Pro Gly Leu Val Asn Gln Thr Asp Lys Glu
1185                    1190                    1195                    1200

Lys Gly Ile Ser Ser Asp Asn Glu Ser Val Ala Ser Cys Asn Ser Val
                    1205                    1210                    1215

Lys Val Asn Pro Ala Ala Gln Pro Val Ser Ser Pro Ala Gln Thr Ser
                    1220                    1225                    1230

Leu Gln Pro Gly Ala Lys Tyr Pro Asp Val Ala Ser Pro Thr Leu Arg
                    1235                    1240                    1245

Arg Leu Phe Gly Gly Lys Pro Thr Lys Gln Val Pro Ile Ala Thr Ala
                    1250                    1255                    1260

Glu Asn Met Lys Asn Ser Val Val Ile Ser Asn Pro His Ala Thr Met
1265                    1270                    1275                    1280

Thr Gln Gln Gly Asn Leu Asp Ser Pro Ser Gly Ser Gly Val Leu Ser
                    1285                    1290                    1295

Ser Gly Ser Ser Ser Pro Leu Tyr Ser Lys Asn Val Asp Leu Asn Gln
                    1300                    1305                    1310

Ser Pro Leu Ala Ser Ser Pro Ser Ser Ala His Ser Ala Pro Ser Asn
                    1315                    1320                    1325

Ser Leu Thr Trp Gly Thr Asn Ala Ser Ser Ser Ser Ala Val Ser Lys
                    1330                    1335                    1340

Asp Gly Leu Gly Phe Gln Ser Val Ser Ser Leu His Thr Ser Cys Glu
1345                    1350                    1355                    1360

Ser Ile Asp Ile Ser Leu Ser Ser Gly Gly Val Pro Ser His Asn Ser
                    1365                    1370                    1375

Ser Thr Gly Leu Ile Ala Ser Ser Lys Asp Asp Ser Leu Thr Pro Phe
                    1380                    1385                    1390

Val Arg Thr Asn Ser Val Lys Thr Thr Leu Ser Glu Ser Pro Leu Ser
```

84

```
                1395                1400                1405

Ser Pro Ala Ala Ser Pro Lys Phe Cys Arg Ser Thr Leu Pro Arg Lys
   1410                1415                1420

Gln Asp Ser Asp Pro His Leu Asp Arg Asn Thr Leu Pro Lys Lys Gly
1425                1430                1435                1440

Leu Arg Tyr Thr Pro Thr Ser Gln Leu Arg Thr Gln Glu Asp Ala Lys
               1445                1450                1455

Glu Trp Leu Arg Ser His Ser Ala Gly Gly Leu Gln Asp Thr Ala Ala
           1460                1465                1470

Asn Ser Pro Phe Ser Ser Gly Ser Ser Val Thr Ser Pro Ser Gly Thr
           1475                1480                1485

Arg Phe Asn Phe Ser Gln Leu Ala Ser Pro Thr Thr Val Thr Gln Met
       1490                1495                1500

Ser Leu Ser Asn Pro Thr Met Leu Arg Thr His Ser Leu Ser Asn Ala
1505                1510                1515                1520

Asp Gly Gln Tyr Asp Pro Tyr Thr Asp Ser Arg Phe Arg Asn Ser Ser
               1525                1530                1535

Met Ser Leu Asp Glu Lys Ser Arg Thr Met Ser Arg Ser Gly Ser Phe
           1540                1545                1550

Arg Asp Gly Phe Glu Glu Val His Gly Ser Ser Leu Ser Leu Val Ser
           1555                1560                1565

Ser Thr Ser Ser Val Tyr Ser Thr Pro Glu Glu Lys Cys Gln Ser Glu
       1570                1575                1580

Ile Arg Lys Leu Arg Arg Glu Leu Asp Ala Ser Gln Glu Lys Val Ser
1585                1590                1595                1600

Ala Leu Thr Thr Gln Leu Thr Ala Asn Ala His Leu Val Ala Ala Phe
               1605                1610                1615

Glu Gln Ser Leu Gly Asn Met Thr Ile Arg Leu Gln Ser Leu Thr Met
           1620                1625                1630

Thr Ala Glu Gln Lys Asp Ser Glu Leu Asn Glu Leu Arg Lys Thr Ile
       1635                1640                1645

Glu Leu Leu Lys Lys Gln Asn Ala Ala Ala Gln Ala Ala Ile Asn Gly
       1650                1655                1660

Val Ile Asn Thr Pro Glu Leu Asn Cys Lys Gly Asn Gly Thr Ala Gln
1665                1670                1675                1680

Ser Ala Asp Leu Arg Ile Arg Arg Gln His Ser Ser Asp Ser Val Ser
           1685                1690                1695
```

85

```
Ser Ile Asn Ser Ala Thr Ser His Ser Ser Val Gly Ser Asn Ile Glu
          1700                1705                1710

Ser Asp Ser Lys Lys Lys Lys Arg Lys Asn Trp Val Asn Glu Leu Arg
          1715                1720                1725

Ser Ser Phe Lys Gln Ala Phe Gly Lys Lys Lys Ser Pro Lys Ser Ala
          1730                1735                1740

Ser Ser His Ser Asp Ile Glu Glu Met Thr Asp Ser Ser Leu Pro Ser
1745                1750                1755                1760

Ser Pro Lys Leu Pro His Asn Gly Ser Thr Gly Ser Thr Pro Leu Leu
               1765                1770                1775

Arg Asn Ser His Ser Asn Ser Leu Ile Ser Glu Cys Met Asp Ser Glu
          1780                1785                1790

Ala Glu Thr Val Met Gln Leu Arg Asn Glu Leu Arg Asp Lys Glu Met
          1795                1800                1805

Lys Leu Thr Asp Ile Arg Leu Glu Ala Leu Ser Ser Ala His Gln Leu
          1810                1815                1820

Asp Gln Leu Arg Glu Ala Met Asn Arg Met Gln Ser Glu Ile Glu Lys
1825                1830                1835                1840

Leu Lys Ala Glu Asn Asp Arg Leu Lys Ser Glu Ser Gln Gly Ser Gly
               1845                1850                1855

Cys Ser Arg Ala Pro Ser Gln Val Ser Ile Ser Ala Ser Pro Arg Gln
               1860                1865                1870

Ser Met Gly Leu Ser Gln His Ser Leu Asn Leu Thr Glu Ser Thr Ser
          1875                1880                1885

Leu Asp Met Leu Leu Asp Asp Thr Gly Glu Cys Ser Ala Arg Lys Glu
          1890                1895                1900

Gly Gly Arg His Val Lys Ile Val Val Ser Phe Gln Glu Glu Met Lys
1905                1910                1915                1920

Trp Lys Glu Asp Ser Arg Pro His Leu Phe Leu Ile Gly Cys Ile Gly
               1925                1930                1935

Val Ser Gly Lys Thr Lys Trp Asp Val Leu Asp Gly Val Val Arg Arg
               1940                1945                1950

Leu Phe Lys Glu Tyr Ile Ile His Val Asp Pro Val Ser Gln Leu Gly
          1955                1960                1965

Leu Asn Ser Asp Ser Val Leu Gly Tyr Ser Ile Gly Glu Ile Lys Arg
1970                1975                1980

Ser Asn Thr Ser Glu Thr Pro Glu Leu Leu Pro Cys Gly Tyr Leu Val
1985                1990                1995                2000
```

86

Gly Glu Asn Thr Thr Ile Ser Val Thr Val Lys Gly Leu Ala Glu Asn
          2005   2010   2015

Ser Leu Asp Ser Leu Val Phe Glu Ser Leu Ile Pro Lys Pro Ile Leu
          2020   2025   2030

Gln Arg Tyr Val Ser Leu Leu Ile Glu His Arg Arg Ile Ile Leu Ser
          2035   2040   2045

Gly Pro Ser Gly Thr Gly Lys Thr Tyr Leu Ala Asn Arg Leu Ser Glu
          2050   2055   2060

Tyr Ile Val Leu Arg Glu Gly Arg Glu Leu Thr Asp Gly Val Ile Ala
2065   2070   2075   2080

Thr Phe Asn Val Asp His Lys Ser Ser Lys Glu Leu Arg Gln Tyr Leu
          2085   2090   2095

Ser Asn Leu Ala Asp Gln Cys Asn Ser Glu Asn Asn Ala Val Asp Met
          2100   2105   2110

Pro Leu Val Ile Ile Leu Asp Asn Leu His His Val Ser Ser Leu Gly
          2115   2120   2125

Glu Ile Phe Asn Gly Leu Leu Asn Cys Lys Tyr His Lys Cys Pro Tyr
          2130   2135   2140

Ile Ile Gly Thr Met Asn Gln Ala Thr Ser Ser Thr Pro Asn Leu Gln
2145   2150   2155   2160

Leu His His Asn Phe Arg Trp Val Leu Cys Ala Asn His Thr Glu Pro
          2165   2170   2175

Val Lys Gly Phe Leu Gly Arg Phe Leu Arg Arg Lys Leu Met Glu Thr
          2180   2185   2190

Glu Ile Ser Gly Arg Val Arg Asn Met Glu Leu Val Lys Ile Ile Asp
          2195   2200   2205

Trp Ile Pro Lys Val Trp His His Leu Asn Arg Phe Leu Glu Ala His
          2210   2215   2220

Ser Ser Ser Asp Val Thr Ile Gly Pro Arg Leu Phe Leu Ser Cys Pro
2225   2230   2235   2240

Ile Asp Val Asp Gly Ser Arg Val Trp Phe Thr Asp Leu Trp Asn Tyr
          2245   2250   2255

Ser Ile Ile Pro Tyr Leu Leu Glu Ala Val Arg Glu Gly Leu Gln Leu
          2260   2265   2270

Tyr Gly Arg Arg Ala Pro Trp Glu Asp Pro Ala Lys Trp Val Met Asp
          2275   2280   2285

Thr Tyr Pro Trp Ala Ala Ser Pro Gln Gln His Glu Trp Pro Pro Leu

87

```
          2290                2295                2300
Leu Gln Leu Arg Pro Glu Asp Val Gly Phe Asp Gly Tyr Ser Met Pro
2305                2310                2315                2320

Arg Glu Gly Ser Thr Ser Lys Gln Met Pro Pro Ser Asp Ala Glu Gly
               2325                2330                2335

Asp Pro Leu Met Asn Met Leu Met Arg Leu Gln Glu Ala Ala Asn Tyr
          2340                2345                2350


Ser Ser Pro Gln Ser Tyr Asp Ser Asp Ser Asn Ser Asn Ser His His
          2355                2360                2365

Asp Asp Ile Leu Asp Ser Ser Leu Glu Ser Thr Leu
     2370                2375                2380
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<210> 28
<211> 96
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (1)..(93)

<400> 28

agc agg gag agg gga ggg agt gtg ccg tct ctt ctg caa ggg cag tgc      48
Ser Arg Glu Arg Gly Gly Ser Val Pro Ser Leu Leu Gln Gly Gln Cys

ccc agc ctc agc cac act tct gat ctg cag tcc aac aga cct ttc tag      96
Pro Ser Leu Ser His Thr Ser Asp Leu Gln Ser Asn Arg Pro Phe  *
```

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<210> 29
<211> 75
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (1)..(72)

<400> 29

cat gcc aaa gag aac ctg ggg gtg cca ggg ggt cct cag agc tca cac      48
His Ala Lys Glu Asn Leu Gly Val Pro Gly Gly Pro Gln Ser Ser His

tgc act tgt ggc acc cac agc gag tag                                  75
Cys Thr Cys Gly Thr His Ser Glu  *
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88

<210> 30
<211> 489
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (1)..(489)

<400> 30

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cca tcc gtg agc cga gga aac tgt aca cag atc tac aca gac tgg gcc      48
Pro Ser Val Ser Arg Gly Asn Cys Thr Gln Ile Tyr Thr Asp Trp Ala


aat cat tac cta gcc aaa tcc ggc cac aag cgt ctc atc aag gat ctc      96
Asn His Tyr Leu Ala Lys Ser Gly His Lys Arg Leu Ile Lys Asp Leu


cag caa gat gtg aca gat ggc gtc ctc ctg gcc cag att atc cag gtt     144
Gln Gln Asp Val Thr Asp Gly Val Leu Leu Ala Gln Ile Ile Gln Val


gtg gca aat gaa aag att gaa gac atc aat ggc tgt ccg aag aac aga     192
Val Ala Asn Glu Lys Ile Glu Asp Ile Asn Gly Cys Pro Lys Asn Arg


tcc caa atg att gaa aac ata gat gcc tgc ttg aat ttc ctg gca gct     240
Ser Gln Met Ile Glu Asn Ile Asp Ala Cys Leu Asn Phe Leu Ala Ala


aag gga ata aac atc cag ggg ctg tct gca gaa gag atc agg aat gga     288
Lys Gly Ile Asn Ile Gln Gly Leu Ser Ala Glu Glu Ile Arg Asn Gly


aac ctc aag gcc att cta ggc ctc ttc ttc agc ctc tcc cga tac aag     336
Asn Leu Lys Ala Ile Leu Gly Leu Phe Phe Ser Leu Ser Arg Tyr Lys


cag cag cag cag cag ccc cag aag cag cac ctc tcc tca cct ctg ccg     384
Gln Gln Gln Gln Gln Pro Gln Lys Gln His Leu Ser Ser Pro Leu Pro


ccc gcc gta tcc cag gtg gcc ggg gcc ccc tcc cag tgc cag gct ggc     432
Pro Ala Val Ser Gln Val Ala Gly Ala Pro Ser Gln Cys Gln Ala Gly


acc cct cag cag cag gtg cca gtc act ccc caa gcc ccg tgc cag cct     480
Thr Pro Gln Gln Gln Val Pro Val Thr Pro Gln Ala Pro Cys Gln Pro


                                                                     489
cac cag cca
His Gln Pro
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<210> 31
<211> 31
<212> PRT
<213> Homo sapiens

<400> 31

Ser Arg Glu Arg Gly Gly Ser Val Pro Ser Leu Leu Gln Gly Gln Cys
1   5   10   15

Pro Ser Leu Ser His Thr Ser Asp Leu Gln Ser Asn Arg Pro Phe
            20   25   30

<210> 32
<211> 24
<212> PRT
<213> Homo sapiens

<400> 32

His Ala Lys Glu Asn Leu Gly Val Pro Gly Gly Pro Gln Ser Ser His
                5   10   15

Cys Thr Cys Gly Thr His Ser Glu
            20

<210> 33
<211> 163
<212> PRT
<213> Homo sapiens

<400> 33

Pro Ser Val Ser Arg Gly Asn Cys Thr Gln Ile Tyr Thr Asp Trp Ala
                5   10   15

Asn His Tyr Leu Ala Lys Ser Gly His Lys Arg Leu Ile Lys Asp Leu
            20   25   30

Gln Gln Asp Val Thr Asp Gly Val Leu Leu Ala Gln Ile Ile Gln Val
        35   40   45

Val Ala Asn Glu Lys Ile Glu Asp Ile Asn Gly Cys Pro Lys Asn Arg
    50   55   60

Ser Gln Met Ile Glu Asn Ile Asp Ala Cys Leu Asn Phe Leu Ala Ala

90

```
        65                 70                 75                 80
        Lys Gly Ile Asn Ile Gln Gly Leu Ser Ala Glu Glu Ile Arg Asn Gly
                         85                 90                 95

        Asn Leu Lys Ala Ile Leu Gly Leu Phe Phe Ser Leu Ser Arg Tyr Lys
                        100                105                110

        Gln Gln Gln Gln Gln Pro Gln Lys Gln His Leu Ser Ser Pro Leu Pro
                    115                120                125

        Pro Ala Val Ser Gln Val Ala Gly Ala Pro Ser Gln Cys Gln Ala Gly
                130                135                140

        Thr Pro Gln Gln Gln Val Pro Val Thr Pro Gln Ala Pro Cys Gln Pro
        145                150                155                160

        His Gln Pro
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<210> 34
<211> 479
<212> DNA
<213> mouse

<220>
<221> CDS
<222> (3)...(476)

<400> 34

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   Glu Lys Ser Arg Thr Met Ser Arg Ser Gly Ser Phe Arg Asp Gly


ttt gag gaa gtt cat gga tcc tcc ctg tcc ttg gtt tcc agc aca tcc       95
Phe Glu Glu Val His Gly Ser Ser Leu Ser Leu Val Ser Ser Thr Ser


tcc atc tac tcc acg cca gaa gaa aaa tgc cag tca gag att cga aag       143
Ser Ile Tyr Ser Thr Pro Glu Glu Lys Cys Gln Ser Glu Ile Arg Lys


ctg agg cga gaa ctg gat gcc tcc cag gaa aag gtg tct gcg ctg act       191
Leu Arg Arg Glu Leu Asp Ala Ser Gln Glu Lys Val Ser Ala Leu Thr


acc cag ctg act gca aat gct cac ctt gtg gca gcc ttc gag cag agt       239
Thr Gln Leu Thr Ala Asn Ala His Leu Val Ala Ala Phe Glu Gln Ser


ctg gga aac atg acc atc agg cta cag agt tta act atg acc gct gag       287
Leu Gly Asn Met Thr Ile Arg Leu Gln Ser Leu Thr Met Thr Ala Glu


cag aag gat tca gaa ctg aac gag tta aga aaa acc atc gag ctg ctg       335
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91

Gln Lys Asp Ser Glu Leu Asn Glu Leu Arg Lys Thr Ile Glu Leu Leu

aag aaa cag aat gca gct gcc cag gct gcc att aat gga gtg att aac   383
Lys Lys Gln Asn Ala Ala Ala Gln Ala Ala Ile Asn Gly Val Ile Asn

acg cca gag ctc aac tgc aaa gga aat ggc agt gcc agg cta cag acc   431
Thr Pro Glu Leu Asn Cys Lys Gly Asn Gly Ser Ala Arg Leu Gln Thr

tac gca tcc gca gca aca ctc ctc cga cag tgt ctc cag tat caa tag   479
Tyr Ala Ser Ala Ala Thr Leu Leu Arg Gln Cys Leu Gln Tyr Gln   *

<210> 35
<211> 22
<212> DNA
<213> mouse

<220>
<221> CDS
<222> (1)...(21)

<400>   35

cgc cac cag cca ctc aag tgt g   22
Arg His Gln Pro Leu Lys Cys

<210> 36
<211> 158
<212> PRT
<213> mouse

<400> 36

Glu Lys Ser Arg Thr Met Ser Arg Ser Gly Ser Phe Arg Asp Gly Phe
  1   5   10   15

Glu Glu Val His Gly Ser Ser Leu Ser Leu Val Ser Ser Thr Ser Ser
              20   25   30

Ile Tyr Ser Thr Pro Glu Glu Lys Cys Gln Ser Glu Ile Arg Lys Leu
              35   40   45

Arg Arg Glu Leu Asp Ala Ser Gln Glu Lys Val Ser Ala Leu Thr Thr
    50   55   60

Gln Leu Thr Ala Asn Ala His Leu Val Ala Ala Phe Glu Gln Ser Leu
  65   70   75   80

Gly Asn Met Thr Ile Arg Leu Gln Ser Leu Thr Met Thr Ala Glu Gln
              85   90   95

92

Lys Asp Ser Glu Leu Asn Glu Leu Arg Lys Thr Ile Glu Leu Leu Lys
            100   105   110

Lys Gln Asn Ala Ala Ala Gln Ala Ala Ile Asn Gly Val Ile Asn Thr
            115   120   125

Pro Glu Leu Asn Cys Lys Gly Asn Gly Ser Ala Arg Leu Gln Thr Tyr
            130   135   140

Ala Ser Ala Ala Thr Leu Leu Arg Gln Cys Leu Gln Tyr Gln
145   150   155

<210> 37
<211> 7
<212> PRT
<213> mouse

<400> 37

Arg His Gln Pro Leu Lys Cys
                5

<210> 38
<211> 19
<212> PRT
<213> artificial Sequence

<220>
<223> Description of the artificial Sequence: Peptide for production of AK

<400> 38

Glu Lys Gly Glu Asp Pro Glu Thr Arg Arg Met Arg Thr Val Lys Asn
                5   10   15

Ile Ala Asp

<210> 39
<211> 81369
<213> DNA
<214> Homo sapiens

<400> 39

gatcagactt tgaagagtgt ttgtaccatg ctaaagttta cagaatttat tcctgctctt   60

tgagggtgca ttgcaaatcc aggctagagg gagagatacc agttaggana gtacagcaat   120

93

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actctactgg gaaatggtga ggtgtttcgt gaagacaatg gcaacacaga tgaagacatg      180

cagatggagg aaataaagat ccagttgagc ttgttggcca gttggataga ggttgaggtt      240

atgcatgatg gagcaatcta ggtttttgtc ttgggtaggt gtttccatga tagtactcag      300

aatgaatcat atagttgtac aggttgaatc ccacccatgt ttgcacaata gagtgactgt      360

ctagctgaaa tccagatgac actctgtatg ctaagctatg cttcatggaa ctgtataaag      420

gcacttgcta cataggctag tggcagatct ggaagtaacc tatatggtat ataggaaatg      480

aggtggcttt tgtataaatc ctacagataa atttcatttc ctgatcctat tattttgact      540

catgttagcc caagaagagt attcagtact tcatatccct gaaggtaaga cagagtagta      600

ttagattcac tatttggcaa ataaaaggga tcaagtccta agatcaagct gatgaatcaa      660

cacctcatag gatatgtccc aaccaattat atggcttccc ctataaataa aatctagttc      720

tcttctctgg agaggaacag tgaagaatat cataacctat gctacaaact gcttgagtag      780

gagctacttc tctccaaggc tttatatcat tcattctggc aggcccctct gtttgttctc      840

accagctcct gggaaattta tttctcctct agtgatataa aagctctctg tttgagatga      900

agggctgccc agtttatcag atctgtatta gtctgttctc aggctgctaa taaagacata      960

cctgagactg agtaatttat gaaggaaaga ggtttaattg actcacagtt ccacatggct     1020

ggggaggcct cacaatcatg gcgaaagact aataaggagc aaagtcacat cttacatggc     1080

tgcagacaag agagcatgtg caggggaact gctctccata aaaccatcag atcttgtgag     1140

acttgttcac tattacaaga acaacagaca ggaaaacccg ccccctcaat tcaattacct     1200

gccactggga ccctcccaca acacatgggg attatgagag ctacaattca agatgagatt     1260

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gactaaaatc ctctttaggg aggaagcaaa attcagatgg atgttactaa acaaagctca     1560

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agacctggag ggaggttagg tcatcagcaa tgaggagact gcctggaaaa tcctagaaaa     1680

ttaagacatc tggtcaggca aggtcatatc accagcacac ttcccttttc aagttgaatc     1740

cctttcctct gttaagagga ttcaagtgtc tttcttgcat tttgtcttct cttctatatc     1800
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94

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catgcttgca atataaggag acagcagttg gctgtttgtg ctagaaaata taaatggcca    1860

ttttgaaagc atgccagaca ggatctgcgg caagttttca atgttactgc tgccatctgt    1920

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ttcacccca tctagagata ttcacttact gaagtgcctt tttaaagcaa tgttcctcac    2040

caaggcgatg ttctgaatgt tttaaaatgg aagaatctgg aatgttttta ttataataca    2100

ttttgtatat cccaaagcaa aaatcaattt cttcatggtt aatacttttg taattttgtt    2160

tttaataata ttttcctttt aaatataaga aatattttat tgaattaata ctttaatgta    2220

gctgtttcaa gtaagataaa acagaacaga ttactgtttt caaccttgtt cacagttagc    2280

tctgtaacta agttgttgag ctttatctaa gctttttat ttttacataa cgtttccctt     2340

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aatgccaaag atatttcaag ggagaaagaa ggtttttaaa aggagagaca attcagctca    2460

gacttaatag ctgtgattgc tatttattaa gcagaacgcc tataactaaa ttctcagata    2520

tccaaaaaac agcctgtaca ttctcaaaag tgaagattac acattttcta agttaaggta    2580

aaagttttgt ctctgtagca tcttactgat ttctatcttc tcattctgcc ttaataatgt    2640

cactaaataa atgtttgatg cactaataca tgaataaaac tattcatggt aatgattctt    2700

tagaaacaca gctaagtttt gtaattttgt tttttaaaaa ttaaaaattt aaatataaaa    2760

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tcaacaaata gggcagtgga aaacatggta atcactaaaa atgctcacat gtcatatatt    2940

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caaattatat cataaaattt tctgggcaaa aatattacag aagaaaataa gaaagattta    3120

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aacaaagaaa cagatttggg aaatatttga aactggtttt tttttagcat ttaaaaatgt    3240

aatacaaatg gattatttaa actccattgc aaaaatacac aaaggacatt gacaatgtct    3300

ggaaataaaa ttagctaagt aagttataga aaaactcagt ctcacaattt gacaaatgta    3360

actgaaaact attaatataa ttagtaacta tttttacatg tcaaaatttt tgaattacta    3420

aaggaaacca caatgcctga aagtatccag ggttttttt tttttttata atattggcac     3480

tgtcatatgg gtggcaggaa ttgaagtgat gttgtttctt cagttattaa gttgcatctg    3540
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cagtgtttca aatgtccaaa acctgtgagt cagtaattct cttttttgtat atttatccta   3600

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cttacaatag ttagaaaatt gtaaaatgct ttatgcatct taaaatataa attgttgaat   3720

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gacttgacag aaatcatcaa aatgctaatg gtggttactt ctgggtggga atacagatga   3960

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taaaattact ttatctcctt tgtgatttca gcccatttaa aaaaaataga tgtttctact   4320

ctccttcaga tatcattaaa acataaactt gtgcctgact gcataaatcc cttttaaact   4380

aatatcactt attacgttta actaagtcta cctagggctt ccttgtataa agaacaagag   4440

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cacactttcc ccaaaattgt tttatgccta tattgtagga gaccatgcaa gagacctaga   4920

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ctattgcact tctaagatac tctaatttct tagcactcta tataaaatcc tttaagggct   5220
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taatgtttag tcttcatttt cctgataatg gctatctaaa gttatctcct caaagaagca    5460

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gaatctttt taaactgcta taaaaatcat tacatataca ttttgtaggt cgagagtaag    6000

gtatttaaca taaaatcatt ttagtatatc agtgtttata tagacttagg tttttctcat    6060

ttaaaacctc ttttaatgac ttgtgctttt cttcatggta ataaacatt ttcccaggaa    6120

gtgctgaata aatctttctt gaaatacgtt ttattgcttt ctatcaatga ccctgaagta    6180

atacagaatt tacacttcag cggttgcaat gctcaaactt gacaggtaat gcactgtgtt    6240

tgctgatata agaggtatga tgtagggcta agtggttttg tgctcattta gctttcagga    6300

gaaaataatt gacttaacat tttgatacta aaacccaaag cctaacagtt aattcttggt    6360

attttaaatt attattgcaa agattattgt gccgaataat atgaaaatat tttatataat    6420

atttaaaaag tatatctctt tcttggtatt atttaaatta ccataaaaat gtgcgaaaaa    6480

gttatactga aatgtgatag gatctttttaa aagtggtgcc ttgatttttgt taagtgttac    6540

ctagtttttcc tctgaaaaca agaaacatac ccagaagttt tcacgaaatg gtctcatgaa    6600

tatctaaggt tagtccgtag tctcatctga gacaaggaaa gtcccttcca ctatgagcct    6660

gtaaaatcac aagcaagcta gttacttcct agatacaatg ggagtactgg tattgggtaa    6720

acacagctgt ttcaaatggg agaaattggc caaaattaat gggttacagg gcatgcaatt    6780

ccgaaatcca tctgggcagt caaattgtaa aactccaaaa tgatntcttt tgactccatg    6840

tntcacatcc aggacatgct gangcaagag ataggttccc ataatctttg gcagctctgc    6900

ccctgtggct ttgcagggta tatcacccct cccagctgct ttcacaggct ggcattgagt    6960
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97

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ggaggatgat ggccctcttc tcatagctcc actaggccgt gctccagtag agactctgtg        7080

ggggctctga ccccagattt ccctcctgca ctgccctagc agagattctt catgagggcc        7140

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gtggaggttc ccaaacctcg attcttaatt tctgtgcacc tgcaggctct ctaccacgtg        7260

gaagctgcca aggtttgggg cttgcaccct ctgaaaccac aggctgagct ataccttggc        7320

cccttttagc aatggctgga gtgactggga cacagggcac caagtctcta ggctgcacac        7380

agtatgggca ccctgggccc agccctcaaa atcatttttt cctcctaggc ttctggatca        7440

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98

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99

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102

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103

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104

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105

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106

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109

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110

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111

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112

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113

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114

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116

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117

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118

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119

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120

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121

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122

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123

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124

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125

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126

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127

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128

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129

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130

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131

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132

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133

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134

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136

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137

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138

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139

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